पढ़ें और सीखें योजना

[illegible]

डा० श्याम सिंह 'शशि'

विभागीय सहयोग
डा० रामजन्म शर्मा



राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING

(घ) देश-विदेश परिचय
(ङ) सांस्कृतिक विषय
(च) वैज्ञानिक विषय
(छ) सामाजिक विज्ञान के विषय

इन पुस्तकों के निर्माण में हम प्रसिद्ध लेखकों, अनुभवी अध्यापकों और योग्य कलाकारों का सहयोग ले रहे हैं। प्रत्येक पुस्तक के प्रारूप पर भाषा, शैली और विषय-विवेचन की दृष्टि से सामूहिक विचार करके इसे अंतिम रूप दिया जाएगा।

परिषद् इस माला की पुस्तकों को लागत-मूल्य पर ही प्रकाशित कर रही है ताकि ये अपने देश के सभी कोनों में पहुँच सकें। भविष्य में इन पुस्तकों का अन्य भारतीय भाषाओं में अनुवाद कराने की भी योजना है।

हम आशा करते हैं कि शिक्षा क्रम, पाठ्यक्रम और पाठ्यपुस्तकों के क्षेत्र में किए गए कार्य की भाँति ही परिषद् की इस योजना का भी व्यापक स्वागत होगा।

प्रस्तुत पुस्तक के लेखन के लिए डा. श्याम सिंह 'शशि' ने हमारा निमंत्रण स्वीकार किया, जिसके लिए हम उनके अत्यंत आभारी हैं। जिन-जिन विद्वानों अध्यापकों और कलाकारों से इस पुस्तक को अंतिम रूप देने में हमें सहयोग मिला है उनके प्रति मैं कृतज्ञता ज्ञापित करता हूँ।

परिषद् में यह योजना प्रो० अनिल विद्यालकार (अवकाश प्राप्त) के मार्गदर्शन में चल रही थी। उनके सहयोगियों में श्रीमती संयुक्ता लूदरा, डा० रामजन्म शर्मा, डा० सुरेश पाण्डे, डा० हीरालाल बाछोतिया और डा० अनिरुद्ध राय सक्रिय सहयोग दे रहे हैं। विज्ञान की पुस्तकों के लेखन का कार्य हमारे विज्ञान एवं गणित शिक्षा विभाग के डा० रामदुलार शुक्ल देख रहे हैं। योजना के संचालन में डा० बाछोतिया विशेष रूप से सक्रिय रहे हैं। मैं अपने सभी सहयोगियों को हार्दिक धन्यवाद और बधाई देता हूँ।

इस माला की पुस्तकों पर बच्चों, अध्यापकों और बच्चों के माता-पिता की प्रतिक्रिया का हम स्वागत करेंगे ताकि इन पुस्तकों को और भी उपयोगी बनाने में हमें सहयोग मिल सके।

पी०एल० मल्होत्रा
निदेशक
राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्

नई दिल्ली

विषय-क्रम

गांधी जी का जन्तर

तुम्हें एक जन्तर देता हूं । जब भी तुम्हें सन्देह हो या तुम्हारा अहम् तुम पर हावी होने लगे, तो यह कसौटी आजमाओ :

जो सबसे गरीब और कमजोर आदमी तुमने देखा हो, उसकी शकल याद करो और अपने दिल से पूछो कि जो कदम उठाने का तुम विचार कर रहे हो, वह उस आदमी के लिए कितना उपयोगी होगा । क्या उससे उसे कुछ लाभ पहुंचेगा ? क्या उससे वह अपने ही जीवन और भाग्य पर कुछ काबू रख सकेगा ? यानि क्या उससे उन करोड़ों लोगों को स्वराज्य मिल सकेगा जिनके पेट भूखे हैं और आत्मा अतृप्त है ?

तब तुम देखोगे कि तुम्हारा सन्देह मिट रहा है और अहम् समाप्त होता जा रहा है ।

मो० क० गांधी

1

पंख और तीर

अरुणाचल प्रदेश में घने जंगल हैं। वर्षा भी खूब होती है। इन जंगलों में बड़े खूँखार हाथी पाए जाते हैं। बहुत पुराने जमाने की बात है। एक साल खूब वर्षा हुई। जंगल में साँप, बिच्छू व दूसरे जहरीले जीव पैदा हो गए। कँटीली झाड़ियों से जंगल पट गया। रास्ते बंद हो गए। ऐसी हालत में विशालकाय हाथियों को घूमने-फिरने में कठिनाई होने लगी। एक दिन सारे हाथी मिलकर ब्रह्माजी के पास गए। उन्होंने अपनी मुसीबत बताई और ब्रह्माजी से प्रार्थना की– "भगवन्, हम आपके बनाए जीव हैं। आप हमारी रक्षा करें। पक्षियों की तरह हमें पंख लगा दें, ताकि हम उड़कर इधर से उधर आ-जा सकें।"

ब्रह्माजी के दरबारियों ने यह सुना तो खिलखिलाकर हँस पड़े– "इतना भारी-भरकम शरीर और पक्षियों वाले पंख।" उन्होंने ब्रह्माजी से कहा– "प्रभु, हाथियों की बात मत मानिए। बड़ा अनर्थ हो जाएगा। अगर कोई हाथी उड़कर किसी छप्पर पर बैठ गया, तो न जाने कितनी जानें चली जाएँगी।"

हाथियों का बुरा हाल था। एक बूढ़ा हाथी उठा और तेजी से अपनी सूंड घूमाकर बोला– "महाराज, ये सब हमारी जान लेने पर तुले हैं। धरती के जहरीले जीवों ने हमारी नाक में दम कर रखा है। आप अगर हमें पंख नहीं देंगे, तो हमारी सारी की सारी नस्ल ही खत्म हो जाएगी।" और सारे हाथी भूख हड़ताल पर बैठ गए।

ब्रह्माजी का दिल पसीज गया। उन्होंने तुरंत आदेश दिया– "इस प्रदेश के सभी हाथियों के पंख लगा दिए जाएँ।" देखते-देखते हाथियों के पंख उग आए। अब क्या था! हाथी आकाश में उड़ने लगे। जब जी में आता, किसी पेड़ के ऊपर जा बैठते। जब मन करता, किसी पहाड़ की चोटी पर जाकर लेट जाते।

एक बार किसी लकड़हारे ने एक हाथी को गाली दे दी। वह गुस्से में लाल-पीला हो गया। उड़कर लकड़हारे की झोंपड़ी पर जा बैठा। नीचे उसके बच्चे सो रहे थे। धम्म की आवाज़ हुई। बच्चों ने जोर से एक चीख मारी। बात की बात में झोंपड़ी टूट गई। हाथी नीचे आ गिरा। दो लड़कियों को छोड़कर सब बच्चे नीचे दब गए।

लड़कियाँ रोती-चिल्लाती जंगल की ओर भागीं। एक दिन नागा जनजाति के कुछ शिकारी उधर जा पहुँचे। लड़कियों ने उनको हाथियों की करतूत बताई। उन्होंने अपने भाले सँभाले। वे जैसे ही हाथियों पर भाले से वार करते, हाथी उड़कर पेड़ों पर जा बैठते। आकाश में उड़ जाते। बहुत देर तक लड़ाई होती रही। हाथी हार माननेवाले नहीं थे। उन्होंने नागाओं के गाँव के गाँव उजाड़ दिए।

नागा पुरुषों के साथ-साथ उनकी बहुत-सी स्त्रियाँ भी इस लड़ाई में मारी गईं। डरे हुए बच्चे घरों से बाहर निकल आए। हाथियों के डर से झाड़ियों में छिपने लगे। काँटों से उनके शरीर लहूलुहान हो गए। दूर खड़ी दोनों लड़कियाँ यह सब देख रही थीं। उनकी आँखों में क्रोध के अंगारे फूट रहे थे। एक दूसरे से कहने लगीं– "इस तरह हम नष्ट हो जाएँगे। हाथियों का ही राज्य हो जाएगा। हमें इनसे बदला लेना चाहिए।" देर तक वे दोनों सोचती रहीं। फिर उन्हें एक उपाय सूझ ही गया उन्होंने झाड़ियों में छिपे बच्चों को बुलाया। उन्हें दिलासा दिया। फिर गुलेलें तैयार कीं। हर बच्चे के हाथ में एक-एक गुलेल थी। बच्चों ने कुछ नुकीले पत्थर भी इकट्ठे कर लिए थे।

उन लड़कियों से बच्चों ने कहा– "हम लोग झाड़ियों के पीछे छिपकर हाथियों पर वार करें।" लड़कियाँ अपनी गुलेल ताने आगे चलीं। बच्चे पीछे-पीछे थे। सामने से हाथियों का झुंड आता दिखाई दिया। बच्चों ने अपनी-अपनी गुलेल तानकर हाथियों पर सीधा वार किया। नुकीले पत्थरों की चोट की। उड़ते हुए हाथी भी गुलेल की मार से बच न सके। हाथी घायल होने लगे। बहुत-से हाथियों के पंख भी टूट-टूटकर गिर गए। ब्रह्माजी को युद्ध की खबर पहुँची। वह स्वयं धरती पर आए। बच्चों के साहस को सराहा और हाथियों को डाँटने लगे। दोनों लड़कियों ने ब्रह्माजी से कहा– "पितामह, हम सब आपकी संतान हैं। फिर यह अन्याय क्यों?"

"कैसा अन्याय?" ब्रह्माजी ने अचकचाकर पूछा।

"आपने हाथी जैसे विशालकाय जानवर के पंख लगाकर अन्याय ही तो किया है। वे उड़-उड़कर हमारे घरों पर बैठ जाते हैं। उनके भार से घर गिर जाते

हैं। पंख तो छोटे पक्षियों को ही शोभा देते हैं। आपने देखा होगा, पंख पाकर हाथियों ने क्या तूफान मचाया है। पहले हाथी जंगल में रहते थे। अब गाँव में आकर तबाही मचाने लगे। या तो आप हमारे भी पंख लगा दें या फिर हाथियों के पंख वापस ले लें।

ब्रह्माजी ने पीठ थपथपाकर लड़कियों के साहस की प्रशंसा की। उन्होंने तुरंत हाथियों के पंख गायब कर दिए। फिर कहा– "हाथियों ने जो किया है उसका फल भी उन्हें भुगतना पड़ेगा। अब से हाथी जंगलों में रहेंगे। आबादी में रहना चाहेंगे, तो उन्हें मनुष्य का सेवक बनकर रहना पड़ेगा।" –इतना कहकर ब्रह्माजी अंतर्धान हो गए।

पंख चले जाने से हाथी बहुत निराश हुए। दोनों बहनें अपनी जीत की खुशी में मुसकराने लगीं।

(अरुणाचल प्रदेश की एक लोककथा)

2

रूपहली डायन

सारस तेज आवाज करता उठा। सारी घाटी गूँजने लगी। सारस क्या था, पूरा शेर जैसा आकार हो गया था। उसका शरीर भी अजीब और आवाज़ ऐसी, जैसे शेर की दहाड़ हो। गाँव के बच्चे उसे देखकर डर रहे थे। वह जंगल से गुजरा, तो दूर पेड़ पर कोयल बैठी थी। उसने सारस को पहचान लिया। बोली– "क्यों रे सारस, आज होश खो बैठा है क्या? कल तक मुझसे राम-राम किए बिना नहीं जाता था। आज बात भी नहीं कर रहा है। बड़ा घमंडी बन गया है तू?"

सारस दो पल के लिए रुका। फिर बोला– "देखती नहीं। अब मैं पहले जैसा नहीं रहा। बाबा ने वरदान दिया था। इसीलिए शेर जैसा बन गया हूँ। अब तुम्हारे साथ नहीं रह सकता।"

उस जंगल के दूसरे पक्षियों ने भी उसे बुलाया। अपने साथ कुछ पल रहने को कहा। सारस सभी की बात अनसुनी करके उड़ चला। परी लोक अभी तीन मील दूर था। अंगारों की बारिश होने लगी। एक अंगारा सारस की बाईं आँख में लगा और एक पंख पर। उसकी बाईं आँख फूट गई। एक पंख भी चला गया।

परी देश की महारानी दूर से ही सब देख रही थी। महारानी की अंग रक्षिका परी बोली– "देखो न, महारानी। यह सारस भी परी लोक घूमना चाहता है। यह मुँह और मसूर की दाल।"

हरे पंखों वाली परी बोली– "हम इसका कचूमर निकाल देंगी। यहाँ नहीं घुसने देंगी।"

महारानी ने कहा– "घबराओ नहीं। इसे यहाँ तक आने ही नहीं दूँगी। दूर से इसे शिला बना देती हूँ।" महारानी ने एक तिनका सारस की ओर फेंका। वह तुरंत शिला बन गया।

सारस का एक अजगर दोस्त था। बाबा के वरदान से आज उसके भी पंख लग गए थे। वह भी आसमान में उड़ने लगा। उसे उड़ता देख, पशु-पक्षी भय से काँपने लगे। भला, ऐसा कभी हो सकता है। अजगर जो ढंग से चल फिर भी न सके हवा में उड़ता फिरे।

अजगर उड़कर पर्वत की एक चोटी से दूसरी चोटी पर छलाँगें मारने लगा। पल में यहाँ, पल में वहाँ पहुँच जाता। उसके सिर पर मणि भी थी। उसकी रोशनी से सारा जंगल जगमगाने लगा था।

अजगर घमंड में फूला था। अकड़ में इधर-उधर घूम रहा था। उसे देख, एक कोबरा बोला— "अजगर भाई, आज कहाँ का धावा है? बड़ी अकड़ दिखा रहे हो? इतना रोब-दाब तो कभी नहीं देखा?"

कोबरा पुकारता रहा। वह बिना उत्तर दिए, हवा में उड़ गया। वह भी परी लोक देखने को बेचैन हो गया था। वह परी लोक के पास पहुँच भी न पाया, तभी नौरंगी परी ने दूर से उसे देख लिया। वह अपनी सहेली से बोली— "मैं इसे अभी मजा चखाती हूँ। मेरे नागपाश से बचकर कहाँ जाएगा?" इतने में महारानी आ गई। वह बोली— "नौरंगी, तुम अपना नागपाश सम्भाल कर रखो। मैं इसको अभी शिला बना देती हूँ।" और अजगर भी तुरंत शिला बन गया।

सारस और अजगर जिस जंगल में रहते थे, वहीं एक आदिवासी का डेरा था। लोगों का विश्वास था कि उसकी पत्नी डायन है। वह रात को अपनी चारपाई पर झाड़ू रख अपना रूप बदलकर चली जाती थी। रूप बदलने में उसका जवाब नहीं था। कभी मक्खी बनती कभी भेड़िया, तो कभी कुछ और। इसीलिए वह "रूपहली डायन" के नाम से मशहूर थी। जंगल में जाकर नाचती-गाती। वहीं उसे सारस और अजगर भी मिल जाते थे।

उस रात भी वह जंगल में पहुँची। उसे न सारस मिला और न ही अजगर। एक चूहे ने उसे सारा किस्सा बता दिया। सुनकर वह गुस्से से भर गई। उसने कहा— "आज मैं परी लोक को तहस-नहस कर दूँगी। देखती हूँ, वहाँ की परियाँ कितनी बलवान हैं।" वह क्रोध से आग बबूला हो गई। परी लोक की तरफ चल दी। वह दो मील ही चली थी कि बाज बन गई। चार मील चली, तो आंधी बन गई और फिर मूसलाधार बारिश।

परियों ने देखा, एक डायन परी लोक में आ रही है। वे आश्चर्य में पड़ गईं। कभी सोचा भी नहीं था कि डायन यहाँ आ सकती है। डायन को रास्ते में दो मेमने मिले। उन्होंने कहा— "मौसी, आज परी लोक की पूजा करोगी क्या? तुम्हारा

काम तो लोगों को खाना है। फिर आज पूजा की क्या जरूरत पड़ गई?" डायन ने आव देखा न ताव। दोनों की गर्दन मरोड़ दी।

अब परी लोक एक मील रह गया था। सुरसा की तरह उसका मुँह फैलता जा रहा था। उसके मुँह में ज्वालामुखी-सा धधक रहा था। परियाँ भी उसे देख, घबरा उठी थीं। वे महारानी के पास गईं। महारानी ने कहा– "घबराओं नहीं, मैं इसका घमंड अभी चूर करती हूँ।" महारानी ने अपने सुनहरे पंख लगाए। उड़ चली डायन की ओर। डायन उसे अपनी ओर आती देख, क्रोध से बड़बड़ाने लगी। महारानी अपने साथ शांति अस्त्र लाई थी। उसने अस्त्र छोड़ दिया। डायन जहाँ थी, वहीं रुक गई।

"अरी, ओ डायन। लौट जा वापस। बेकार हमसे युद्ध का खतरा मोल न ले। देख, तेरे साथियों का क्या हुआ। हम नहीं चाहते कि तेरा भी वही हाल हो।" – महारानी ने चेतावनी दी। डायन का शरीर तो जड़ हो गया था, किंतु मुँह बंद न हुआ। वह बोली– "तू मेरे दोनों साथियों को फिर वैसा ही बना दे, तो जाऊँ। नहीं तो तेरे परी लोक को तहस-नहस कर दूंगी।" महारानी ने बहुत समझाया। पर डायन तो डायन थी। मुँह से विष उगलती रही। अनाप-शनाप बोलती रही।

हारकर महारानी बोली– "तुझे इतना ही प्यार है अपने मित्रों से, तो जा, पेड़ बनकर उनके बीच खड़ी हो जा। तपती धूप में वे दोनों शिलाएँ तेरी छाया पाकर गर्म नहीं होंगी।" कहकर महारानी ने फिर एक तिनका फेंका। दोनों शिलाओं के बीच एक पेड़ खड़ा हो गया। सुनते हैं, आज भी वह डायन पेड़ बनी, परी लोक में खड़ी है।

(हिमाचल प्रदेश की एक लोककथा)

3

ऊँट और चूहा

थार के रेगिस्तान में कभी ऊँटों के झुंड रहते थे। कुछ के नाक में नकेल भी होती थी। मालिक उन्हें पहनाकर यों ही चरने को छोड़ देते थे। दूर-दूर तक रेत-ही-रेत थी। जहाँ कहीं घास-फूस दिखाई पड़ता, ये ऊँट उधर ही चल पड़ते। जब वहाँ का चारा समाप्त हो जाता तो फिर और आगे बढ़ जाते। इस प्रकार उन्होंने लगभग सारा क्षेत्र चर लिया। उसके बाद मीलों तक हरियाली नहीं थी। अब उनका इकट्ठा रहना कठिन हो गया। उनका झुंड तितर-बितर हो गया। ऊपर से तपती धूप और नीचे आग उगलती बालू। क्या करें! कहाँ जाएँ बेचारे! पानी का तो कहीं नाम-निशान ही नहीं था। जो कुछ भी उन्होंने अपनी थैली में भरा था वह भी समाप्त होने लगा।

एक ऊँट उत्तर दिशा की ओर चल पड़ा। कुछ दूर तक तो उसे रेत-ही-रेत मिली। वह भूख के मारे परेशान था। तभी उसे एक खरगोश दिखाई पड़ा। वह उसी तरफ आगे बढ़ता गया। उसे कुछ चूहे भी दिखाई पड़े। उसने सोचा, वह शायद ठीक जगह पहुँचनेवाला है। उसने हिम्मत नहीं हारी। आगे भी कुछ पेड़ दिखाई पड़े। उसके पाँव और तेज गति से चलने लगे। पेड़ों पर कुछ पक्षी चहचहा रहे थे। उसे लगा, वह किसी जंगल के पास पहुँच गया है। लेकिन रेगिस्तान के पास जंगल कहाँ से आ गए? उसके मन में यह शंका भी थी— मृगमरीचिका जैसी।

वह एक पेड़ के पास पहुँच गया। उसने अपनी लम्बी गर्दन को ऊपर उछाला और जल्दी-जल्दी पत्ते मुड़कने लगा। बल-बल की आवाज़ में वह अपनी खुशी प्रकट कर रहा था। वह स्वर्ग जैसा सुख ले रहा था।

उसने पेड़ की कई शाखाओं के पत्ते खा लिए। तभी एक चूहा उधर से आया



और उससे बोला ''ऊँट भाई, इतनी जल्दी क्यों चबा रहे हो? क्या एक ही दिन में सारा वृक्ष खाने का इरादा है? अगर तुम्हारे दूसरे भाई भी इसी तरह यहाँ आ गए तो अपना तो बस कबाड़ा ही हो जाएगा। दूसरे पशुओं के लिए कुछ भी नहीं बचेगा।''

ऊँट ने कोई उत्तर नहीं दिया। उसे तो कई दिन के बाद ऐसा भोजन मिला था। वह चरने में मस्त था।

चूहे ने फिर प्रश्न किया। बोला— अरे ऊँट भाई, मेरी बात का जवाब नहीं दिया। चलो जवाब मत दो मगर बताओ क्या मुझ से दोस्ती करोगे? मैं मित्रता का हाथ बढ़ाने में पहल कर रहा हूँ। तुम्हारी मुसीबत में मैं सहायता करूँगा।

ऊँट ने जबड़ा खोला और हँस कर बोला— अरे बुद्धू, दोस्ती और तेरे साथ। तू भला मेरी क्या सहायता कर सकता है?

ऊँट दूसरी शाखा की ओर बढ़ा। अचानक उसकी नाक की नकेल शाख के साथ उलझ गई। वह उसे छुड़ाने का प्रयत्न करता, किंतु नकेल और उलझ जाती। चूहे ने जब ऊँट की चीख सुनी तो वह उसके पास दौड़ा-दौड़ा आया और बोला— ''दोस्त, चिंता न करो, तुम्हारी मुसीबत अभी दूर कर देता हूँ।'' चूहा पेड़ पर आनन-फानन में चढ़ गया और नकेल को कुतरने लगा। धीरे-धीरे वह कट गई और ऊँट की जान में जान आई। चूहा बोला, ''क्या अब भी दोस्ती नहीं करोगे?''

ऊँट बड़ा शर्मिन्दा था। उसने कहा, ''भाई, मुझसे गलती हुई। मैंने तुम्हें यों ही छोटा समझ लिया। लेकिन तुम तो मुझसे भी बड़े बन गए। मुझे क्षमा करो। आज से तुम मेरे दोस्त ही नहीं, बल्कि स्वामी भी हो। क्योंकि आज तुम न होते, तो मेरे प्राण पखेरू उड़ गए होते। दोनों ने एक दूसरे से विदा ली।

ऊँट जंगल में बड़े मजे में रहने लगा। वह अपना रेगिस्तान लगभग भूल गया था। एक दिन वह बबूल के पत्तों पर पिला हुआ था। प्रत्येक वृक्ष के पत्तों का अलग-अलग स्वाद मिलता है। वह रोज वृक्ष बदलता और जो जी में आता खाता।

अचानक किसी राजा की सेना उधर से गुजरी और उसी जंगल में पड़ाव डाल दिया। सेना में घोड़े और ऊँट भी थे। एक सिपाही शाम को घूमने निकला। उसने जंगली ऊँट को देखा तो सोचने लगा— शायद कोई ऊँट पीछे छूट गया है। वह उसकी तरफ बढ़ा। उसकी नाक नकेल रहित देखी तो आश्चर्य हुआ। उसने पूछा— तुम्हारा मालिक कौन है?

ऊँट बोला, ''मेरा मालिक चूहा है।''



सिपाही ने जोर से ठहाका लगाया और कहा, "चूहे कब से ऊँट पालने लगे?" ऊँट कुछ नहीं बोला और चल पड़ा। लेकिन राजा के दूसरे सिपाही भी वहाँ पहुँच गए। उन्होंने ऊँट को पकड़ लिया। एक ने नाक में नकेल डाल दी और दूसरा उसे कोड़े लगाता हुआ राजा की फौज में ले आया।

चूहे को पता चला तो उसने अपनी बिरादरी को इकट्ठा किया और एक जोशीला भाषण दिया। वह बोला, "दोस्तो, आज एक राजा के सिपाही ने मेरे ऊँट को पकड़ लिया है। आप तो जानते ही हैं कि वह मेरा दोस्त ही नहीं बल्कि भाई से भी बढ़कर है। उसकी रक्षा करनी है। हम किसी से कम नहीं हैं। देखने में छोटे लगते हैं तो क्या हुआ, हमारे पास बुद्धि तो है। बस संगठन की ज़रूरत है। आओ, सब मिलकर एक हो जाओ और आगे बढ़ो।

चूहों की फौज लड़ाई के लिए तैयार हो गई। ऊँट का स्वामी सबसे आगे था। सब चूहे राजा के पास पहुँचे। ऊँट के स्वामी ने राजा को ललकारा और कहा, "राजा, तूने मेरे दोस्त को बंदी बना रखा है। मैं तुम्हें चुनौती देता हूँ। अगर ऊँट को तुरंत मुक्त नहीं किया तो हम सब आक्रमण करेंगे और बदला लेंगे।"

राजा खिलखिलाकर हँसा, अरे तुम चूहो, लड़ने चले हो। यह मुँह और मसूर की दाल। जाओ अपना रास्ता लो। ऊँट तुम्हें नहीं मिलेगा।

चूहों ने कहा, "हम लड़ेंगे और जीतेंगे भी।"

रात को सब चूहे अस्तबल में पहुँचे और उन्होंने घोड़ों तथा ऊँटों की काठियाँ कुतर डालीं। कुछ नकेलों की तरफ बढ़े और उन्हें भी काट डाला।

अगले दिन राजा को शत्रु पर हमला करना था, लेकिन जब उसने देखा कि उसके घोड़े तथा ऊँट लड़ाई में जाने योग्य नहीं रहे तो सिर पीटकर रह गया। शत्रु की सेना आ गई। राजा हार गया। उसे बंदी बना लिया गया। उसके सभी पशु भाग गए। इसी बीच चूहे का दोस्त भी छूट गया। वह अपने रेगिस्तान की तरफ चल पड़ा। उसे अब यह जंगल खाने को आ रहा था। चूहों ने उसका स्वागत किया और खुशी-खुशी विदा किया।

ऊँट ने कहा, "चूहे राजा, आओ मेरी पीठ पर बैठो। मेरे साथ मेरे देश चलो। तुम कितने महान हो मेरे भाई।"

चूहा बोला, "जाओ दोस्त, सब को अपना जन्म-स्थान अच्छा लगता है। हमें तो यह जंगल ही प्यारा है। पर एक बात याद रखना भविष्य में छोटे-बड़े या ऊँच-नीच की भावना दिल में मत रखना।"

(राजस्थान की एक लोककथा)



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[illegible]

ोयरा दो महीने का बालक था। मगर वह सेर भर दूध पीता था। फिर खाना भी ाने लगा। वह भी ढेर सारा। सभी आश्चर्य से उसे देखते। कहते– ''वाह, बालक तो पूरा दैत्य लगता है।''

तीन महीने का होते ही वह पेड़ पर चढ़ने लगा। माँ पुकारती– ''उतर आओ बेटा! छोटे हो। गिर पड़ोगे।'' पर वह कहाँ मानने वाला था। पेड़ पर चढ़कर इधर-उधर उछलता। बंदर की तरह खों-खों करके शोर मचाता। उसके लिए डलिया भर रोटी, बालटी भर दूध आता, तब कहीं नीचे उतरता।

माँ ने एक ओझा बुलवाया। उसने कहा, ''यह बच्चा अद्‌भुत लक्षण लेकर आया है। पिछले जन्म में यह कोई दैत्य था। इसकी वजह से गाँव को खतरा पैदा हो सकता है। खास किस्म की एक पूजा होगी। तभी यह बालक दूसरे बालकों की तरह बन सकेगा।''

पूजा की तैयारियाँ होने लगीं। गोयरा के मामा सामान लेने दूर बाजार में गए। रास्ते में भयानक जंगल पड़ता था। वहाँ उन्हें एक दैत्य मिला। वह उसके मामा को कौर-सा निगल गया। गोयरा की माँ बाट जोहती-जोहती थक गई। गाँव के लोग परेशान थे।

गोयरा बचपन से ही ज़ंगली हाथियों की सवारी करने लगा था। शेर का शिकार भी करने लगा। अखाड़े में बड़े-बड़े पहलवान उसके सामने भीगी बिल्ली बन जाते। एक दिन उसे अपने मामा के बारे में पता चल गया। क्रोध से भर, वह धनुष-बाण ले, दैत्य से लड़ने चल दिया। सब भयभीत थे कि अब क्या होनेवाला है। दैत्य ने गोयरा को दूर से ही देख लिया। वह बिजली की तरह चमका और बादल की तरह गरजा। उसके मुँह से आग निकल रही थी। जबड़े पहाड़ी गुफा की



तरह फट गए थे। एक भारी पेड़ उखाड़, दैत्य गोयरा की तरफ भागा।

गोयरा ने एक तीर छोड़ा। तीर दैत्य के मुँह को चीरता हुआ निकल गया। फिर गोयरा ने अपना आकार बढ़ाया। बरगद के वृक्ष की तरह मोटा होता गया। दैत्य का पेड़ उसके हाथ में आकर टिक गया।

कई दिन तक युद्ध होता रहा। इस लड़ाई के कारण गोयरा पहाड़ियाँ फटने लगीं। शिलाओं में दरारें पड़ गईं। सुनते हैं, सात साल तक भयंकर युद्ध चलता रहा। दोनों लहूलुहान हो गए। दैत्य·जिधर भी भागता, गोयरा उसका पीछा करता।

आठवें वर्ष की पहली सुबह दैत्य हार गया। गोयरा ने उसे उठाकर पटक दिया। उसके गिरते ही जोर का धमाका हुआ। गोयरा ने उसका पेट चीर डाला। आश्चर्य से देखा, उसके पेट से उसका मामा निकला। गोयरा की खुशी का ठिकाना न रहा। उसे पीठ पर बैठाकर वह ले आया। सारे गाँव में उल्लास का वातावरण छा गया।

इसके बाद गोयरा गाँव में नहीं रहा। एक दिन गाँववालों ने देखा— गोयरा के दोनों हाथ पंख बन गए हैं।

वह आकाश की ओर उड़ने लगा। गाँववालों से बोला— "मैं तुम्हारे लिए दो चीज़ें छोड़े जा रहा हूँ— बिजली और गर्जन। बिजली में तुम्हें मेरी झलक दिखाई देगी। बादल के गर्जन में मेरा स्वर सुन सकोगे।" यह कह, गोयरा उड़ गया।

(एक गारो लोककथा)

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[illegible]

हिमालय की गोद में बसा था एक गाँव। शिकारी बहुत थे वहाँ। लेकिन हिम्मतवाले बस एक-दो ही थे। एक दिन न जाने किसने चट्टान पर भेड़िए का चित्र बना दिया। थोड़ी देर बाद कोई दूसरा आदमी आया। उसने पाँच पैर, तीन आँखें और चार कान बना दिए। तीसरा आदमी उधर से गुजरा, तो उसने उसके सिर पर दो सींग निकाल दिए।

कुछ महिलाएँ लकड़ियाँ बीनती हुई आईं। चित्र को देखते ही डर से काँप उठीं। उन्होंने गाँव में लौटकर लोगों को बताया– "जंगल में एक भयंकर जानवर आया है उसके पाँच पैर हैं, तीन आँखें हैं और चार कान।" अफवाह एक गाँव से दूसरे गाँव और फिर सभी जगह फैल गई। लोग डर के मारे घर से बाहर नहीं निकलते थे।

एक दिन एक लोमड़ी उस तरफ गई। चित्र को देखा, तो खूब हँसी। सामने ही एक बूढ़ा भेड़िया बैठा था। बोला– क्यों बहन, आज इतनी खुश क्यों हो? क्या कोई तगड़ा शिकार मिल गया है?"

लोमड़ी बोली– "हाँ, भैया! अब सबसे बड़ा शिकार यहाँ का आदमी होगा। यह देखो, एक अजीब भेड़िए की शक्ल। भला, दुनिया में ऐसा भी कोई पशु होता है! लेकिन आदमी बुद्धू होते हैं, इसीलिए ऐसी कल्पना कर डाली।"

"आदमी होता ही डरपोक है। एक काम करोगे! तुम्हारे दादा की खाल अभी सुरक्षित है तुम्हारे पास। उसे तुम मुझे दे दो। मैं विचित्र भेड़िया बनकर शिकार किया करूँगी।"

–चालाक लोमड़ी ने प्रस्ताव रखा।

भेड़िए ने कहा– "मैं तो सचमुच में भेड़िया हूँ, फिर मैं ही शिकार क्यों न करूँ?"

लोमडी ने कहा— "तुम पाँच पैर, तीन आँखें तथा चार कान वाले भेड़िए नहीं बन सकते। यह बात तो मैं ही कर सकती हूँ। इसलिए जो मैं कहूँ, करते जाओ।"

भेड़िया अनमना-सा रहा। उसकी समझ में पूरी बात नहीं आई। उसने चुपचाप अपने दादा की खाल लोमड़ी को दे दी। बोला— "बहन, आधा हिस्सा तो मुझे दिया करोगी न?"

"हाँ, हाँ! क्यों नहीं।"— लोमड़ी उसे तसल्ली देकर चली गई।

अगले दिन लोमड़ी ने बूढ़े भेड़िए की मदद से खाल पहनी। उसने अपने जबड़े में बाँस की दो खपच्चियाँ लगा लीं। दो कानों से बाँध लीं। माथे के बीच में एक काला दाग बनाया, ताकि वह तीसरी आँख दिखाई पड़े।

"पर पाँचवाँ पैर कहाँ से लाओगी बहन?" — भेड़िए ने प्रश्न किया।

"तू तो बुद्धू का बुद्धू ही रहा। देख, अभी बताती हूँ।" —इतना कहकर लोमड़ी ने अपनी पूँछ नीचे लटका ली और बोली— "यह देख, पाँचवाँ पैर।"

एक दिन कोई शिकारी उधर से गुजरा। वह एक वीर पिता का डरपोक बेटा था। लोगों को दिखाने के लिए ही बंदूक लटकाए रहता था। उसने लोमड़ी को विचित्र भेड़िए के रूप में देखा, तो डर गया।

बंदूक हाथ से छूट गई। पेट के बल सरकने लगा। लोमड़ी उसकी हालत देखकर हँसने लगी।

शिकारी किसी तरह गिरता-पड़ता अपने घर पहुँचा। बिस्तर में मुँह छिपाकर लेट गया।

लोमड़ी के हाथ बंदूक लग गई थी। अब वह उसे बड़े रोब से लेकर घूमती और जंगल के सब पशुओं पर धौंस जमाती।

दिन बीतते गए। लोग डर के मारे घर से बाहर कम निकलते थे। शिकारी तो अधमरा-सा ही हो गया था। एक दिन उसने सोचा— क्यों न पास के गाँव में जाकर वहाँ के बूढ़े शिकारी से सलाह ली जाए। वह बूढ़े शिकारी के घर गया। सारी कहानी सुनाई। बूढ़ा शिकारी ठहाका मारकर हँसा। बोला— "अरे मूर्ख, भला ऐसा जानवर भी होता है कहीं?"

"नहीं, काका। आपकी सौगंध खाकर कहता हूँ। मैंने वह जानवर अपनी आँखों से देखा है। उसने मेरी बंदूक भी छीन ली थी।"

"हाँ, जिस शिकारी की बंदूक खो जाती है, वह अधमरा तो अपने आप ही हो जाता है। लेकिन तुम्हें भ्रम हो गया।" बूढ़ा बोला।





शिकारी निराश हो, अपने घर चला आया। उधर लोमड़ी के पास गोलियाँ खत्म हो गई थीं। एक दिन वह शिकारी के घर पहुँची। बोली– ''गोलियाँ दे दो। मैं तुम्हें कुछ नहीं कहूँगी। वरना.....।'' शिकारी के होश उड़ गए। वह रजाई में दुबक गया।

लोमड़ी गोलियाँ लेकर बाहर निकली, तो खिलखिलाकर हँसी। शिकारी की बुद्धि पर तरस आ रहा था उसे। जाते-जाते वह उसकी मुर्गियाँ भी उडा लाई थी। लोमड़ी गोलियाँ तो ले आई, लेकिन उसे बंदूक में कैसे भरे... यही समस्या थी। भेड़िए ने भी कोशिश की, लेकिन सफलता नहीं मिली।

इस बार लोमड़ी ने बूढ़े भेड़िए को शिकारी के घर भेजा। वह उसे घसीटता हुआ लोमड़ी के पास ले आया। भेड़िया बोला– ''जंगल के राजा का हुक्म है, तुरंत बंदूक में गोलियाँ भरना सिखाओ। नहीं तो हम तुम्हारा शिकार करेंगे।'' शिकारी फिर गिड़गिड़ाने लगा।

तभी धाँय-धाँय की आवाज़ आई। लोमड़ी और भेड़िया चित्त हो गए। शिकारी भी बेहोश हो गया। तभी बूढ़ा शिकारी आया। उसे झकझोरते हुए बोला– ''उठ, डरपोक, यह देख! पाँच पैर, चार कान, तीन आँखें और लंबे सींगोंवाले भेड़िए की खाल।'' युवक पागल-सा देख रहा था। बूढ़े शिकारी ने फिर कहा– ''शिकारी जब डर जाता है, तो समझो वह मर गया।''

अब बात शिकारी की समझ में आ गई थी।

(उत्तराखंड की एक लोककथा)

सोचने लगे– "आखिर किसकी थी वह नाव? कौन खेता था उसे? कहीं भूत-प्रेत का चक्कर तो नहीं।"

एक सप्ताह तक नाव हर रोज आती रही। आठवें दिन जेठू ने देखा कि गायों की संख्या में घट-बढ़ होने लगी हैं। गायों की संख्या सुबह और शाम को निन्यानवे ही रहती, किंतु दिन में सौ हो जाती। देखने से कुछ पता नहीं चलता था कि उनमें नई गाय कौन-सी है। सब हैरान थे। इसके बाद से ही कुछ गायें बीमार रहने लगीं। अब वे दूध भी कम देती थी। न जाने क्या बात थी?

गाँव में तरह-तरह की अफवाहें फैल गईं। लोग कहने लगे कि झील के पास पशु नहीं चराने चाहिए।

यह देखकर जेठू ने मन-ही-मन भेद का पता लगाने का निश्चय किया। जादू और भूत-प्रेत की बात सुनकर भी वह नहीं घबराया। बहुत हिम्मती था वह।

कई रोज वह टोह में रहा। आखिर एक शाम उसने देखा, एक लड़की पहाड़ में बनी गुफा से बाहर निकली। एक गाय को लेकर फिर उसी गुफा में चली गई। जेठू भी लड़की के पीछे-पीछे चल पड़ा। द्वार पर पहुँचा, तो वहाँ उसे चाँदी के सिक्के पड़े मिले। एक बार मन में आया कि सिक्कों को उठाकर घर लौट जाए। न जाने गुफा के अंदर क्या हो। लेकिन अगले ही क्षण उसने अपने मन को पक्का किया और गुफा में बढ़ गया।

थोड़ी दूर जाने पर उसे सोने के सिक्कों से भरा एक कलश रखा दिखाई दिया। लेकिन इस बार भी जेठू ने उस ओर ध्यान नहीं दिया। वह बढ़ता ही गया।

गुफा से बाहर निकला, तो उसने अपने को एक लंबे-चौड़े मैदान में पाया। वहाँ भी एक झील थी। उसमें पानी के बदले दूध भरा था। जेठू भौंचक्का सोचता रह गया– "यह क्या चक्कर है? इतना दूध आखिर आता कहाँ से है?"

सब तरफ सन्नाटा था। वह लड़की और गाय अब कहीं दिखाई नहीं दे रही थी। जेठू झाड़ी के पीछे छिपा देखता रहा। इतनी देर बाद एक बात जेठू की समझ में आ गई थी– उसकी गायों के बीमार होने व कम दूध देने का संबंध झील से जरूर था।

दूध की उस झील में सफेद रंग के कुछ पशु लेटे थे। कुछ उड़नेवाली मछलियाँ भी थीं। एक गैंडे जैसा पशु था। एक बार तो वह कुछ हिचकिचाया, फिर बढ़कर दूध की झील के किनारे जा खड़ा हुआ। सोचता रहा– "क्या करना चाहिए?"

दूध तुरंत फट गया। थोड़ी ही देर में वहाँ दूध के बदले सफेद-सा पानी बहने



लगा। उसमें तैरते विचित्र जीव-जंतु भी उड़-उड़कर न जाने कहाँ जाने लगे।

जेठू को लगा, वह जिस काम के लिए आया था, वह हो गया है। अगर दूध की झील का कोई जादू था, तो उसने वह तोड़ दिया है।

वह तुरंत वापस मुड़ गया। रास्ते में पड़े सोने व चाँदी के कुछ सिक्के उसने उठा लिए। फिर जल्दी-जल्दी अपने साथियों के पास लौट आया।

सबने जेठू के साहस की प्रशंसा की। जेठू ने कहा– ''हमें अभी इस गुफा का मुँह पत्थरों से बंद कर देना चाहिए। फिर उधर से कोई डर नहीं रहेगा।''

सब उसकी बात से सहमत थे। वे सब मिलकर भारी-भारी पत्थर लाए, फिर चूने का मसाला बनाकर रात-भर में गुफा का मुँह अच्छी तरह बंद कर दिया।

उस दिन से झील में कोई नाव दिखाई नहीं दी। गायों की संख्या भी कम-ज्यादा नहीं हुई। गाएँ फिर से स्वस्थ होकर भरपूर दूध देने लगीं।

अब गाँववाले जेठू का और भी सम्मान करने लगे। वे कहते– ''जेठू ने अपनी हिम्मत से जादू को भी नाकाम कर दिया।''

(जौनसार बावर की एक लोककथा)

7

सोने वाली गुफा

बहुत पुरानी बात है। सिंधु नदी के इस पार बंजारों के कुछ काफिले रहते थे। उनका काम ही घूमना था। उन दिनों न रेल थीं, न मोटरें। बंजारे घोड़ों पर अपनी सारी गृहस्थी लादकर चलते थे। जहाँ रात हुई, वहीं डेरा डाल देते। आँधी-तूफान में रहने की उन्हें आदत पड़ गई थी।

पंजाब के जाटों का ऐसा ही एक काफिला आल्प्स को पार करके जर्मनी पहुँचा। सिंधी लुहारों का दूसरा काफिला रूस में जाकर बस गया। उनमें कुछ लोग थे ज्योतिषी और कुछ रीछ-भालू नचाने वाले। यूरोप के लोग उन्हें जिप्सी कहकर पुकारते थे। उनसे घृणा भी करते थे।

एक बार क्या हुआ, किसी काफिले का बालक अपने माँ-बाप से बिछुड़ गया। दूसरे काफिले की किसी जिप्सी महिला ने उसे पाल-पोसकर बड़ा किया। उसका नाम जानीसेक रखा गया।

जानीसेक काफिले के दूसरों बच्चों में खेलता। घर के कामकाज में हाथ बँटाता था। जिप्सी महिला को वह माँ कहकर पुकारने लगा। यूरोप के कई देशों में घूमने के कारण वह कई भाषाएँ सीख गया था, लेकिन अपने घर में हमेशा अपने देश की भाषा ही बोला करता था।

जानीसेक जिस जिप्सी महिला के साथ रहता था, वह न जाने कैसे किसी यहूदी जादूगर के चकमे में आ गई। जादूगर ने उससे कहा– "तुम इस लड़के जानीसेक को मेरे साथ भेज दो। मैं तुम्हें मालामाल कर दूँगा।"

जिप्सी महिला तो थी ही बेबस। जानीसेक के लाख आनाकानी करने पर भी उसने उसे यहूदी जादूगर को सौंप दिया। जादूगर उसे अपने साथ जंगल की ओर ले गया। वहाँ एक विचित्र गुफा थी। जानीसेक भयभीत था। जादूगर ने कहा– "डरो नहीं जानी, मैं तुम्हें सोने की गुफा में भेजूँगा। वहाँ एक जादुई ताला



मिलेगा। उसे लेकर मेरे पास चले आना। तुम्हें बहुत से खिलौने मिलेंगे। खाने के लिए बढ़िया केक मिलेगा। फिर मैं तुम्हें आज़ाद भी कर दूँगा। ''जादूगर ने छड़ी दिखाते हुए उसे गुफा का रास्ता बतलाया।

जानी परेशान था। जादूगर मीठी बातों से उसे फुसला रहा था। वह फिर बोला– ''बेटा, मैं तुम्हारे बाप के समान हूँ। तुम्हें गलत जगह नहीं भेजूँगा। जाओ, मेरे बेटे! जल्दी करो।''

जानी गुफा के निकट गया। उस पर पत्थर ढँका था। उसने ज्यों ही पत्थर पर पाँव रखा, धड़ाम से उसके भीतर गिर पड़ा। ऊपर से न जाने कैसे कोई शिला आ पड़ी। बस, एक बात अच्छी हुई कि ताला उसके हाथ आ गया था।

यहूदी जादूगर ने जब देखा कि जानी दब गया है। उसका लौटना मुश्किल है, तो वह परेशान हो उठा। उसे अब ताला नहीं मिल सकता था। कुछ देर ठ़हरकर वह अपने घर लौट गया। जिप्सी महिला को सारा किस्सा सुना दिया।

जानी पूरे साल तक उस गुफा में रहा। उसे न भूख लगी, न प्यास। वह सब जादुई ताले का कमाल था। साल पूरा होते ही होश में आया। उस दिन यहूदी जादूगर फिर उसके पास पहुँचा। जोर से चिल्लाकर बोला– ''मेरे प्यारे बेटे! ताले की चाबी घुमाओ। तुम्हें एक देव मिलेगा। उससे कहना, वह तुम्हें बाहर निकाल दें।''

जादूगर की बात सुन, जानी ने चाबी घुमाई। तुरंत एक देव आया और उसे बाहर निकाल लाया।

जादूगर जानी के लिए खाने की बहुत-सी वस्तुएँ लाया था। गुफा से निकलता देख, वह चिल्लाया– ''प्यारे बेटे, देखो तो, मैं तुम्हारे लिए क्या लाया हूँ? जल्दी से इन्हें खा लो और मुझे ताला दे दो।''

''प्यारे पिता जी, खाना तुम ही खा लो, ताला तो अब मेरा है। तुम तो मुझे दबाकर चले गए थे।'' ... जानीसेक ने उत्तर दिया। फिर जल्दी से ताले में चाबी घुमा दी। इस बार एक साथ पंद्रह देव आकर उसके सामने खड़े हो गए। उनमें से दो सोने से लदे थे और दो चाँदी से। एक देव प्रोफेसर था। दूसरा एक इंजीनियर। दो डाक्टर भी थे। ऐसे देव कभी देखने-सुनने में नहीं आए थे।

सब एकसाथ बोले– ''हुजूर, हम आपकी सेवा में हाजिर हैं। क्या हुक्म है?''

जानीसेक ने कहा– ''मुझे जल्दी से मेरे घर पहुँचा दो।''

जानी तुरंत अपने घर पहुँच गया। जिप्सी महिला ने दरवाज़ा खोला। देखा, जानी सामने खड़ा है।



"तुम आ गए बेटे! ताला ले आए न?" उसने पूछा।

"लेकिन यह ताला तुम्हें भी नहीं मिलेगा। तुमने मुझे उस जादूगर के साथ क्यों भेजा? तुम मेरी माँ नहीं हो।"– यह कहकर जानी ने घर से दूसरा ताला निकाला। उसे दरवाज़े पर लगाकर बाहर आ गया। जिप्सी महिला दरवाज़े के अंदर बंद हो गई। वह अपनी गलती पर पछता रही थी।

जानी ने जादुई ताला लिया। एक होटल की ओर चल पड़ा। वहाँ उसने नौकरी के लिए प्रार्थना की। लेकिन किसी ने भी उसे नौकरी पर नहीं रखा। वह थकामांदा एक पेड़ के नीचे सो गया। उसके पास कपड़े नहीं थे। ठंड के मारे वह काँप रहा था, पर किसी को उस पर दया नहीं आई। आखिर में उसने ताले में फिर से चाबी घुमाई। इस बार भी वे देव उपस्थित हो गए। एक साथ बोले– "हम हाजिर हैं हुजूर! क्या सेवा है?"

– "कोई सेवा नहीं। बस, कहीं काम दिला दो। मुझे नौकरी चाहिए। मैं पढ़ा-लिखा नहीं हूँ; इसलिए होटल में वेटर का काम कर सकूँगा।"

सोने के देव ने कहा–"हुजूर, मुझसे सोना माँगा होता। यह नौकरी क्यों माँगी?"

प्रोफेसर देव बोला– "महाराज, मैं आपको बहुत बड़ी विद्या दे सकता हूँ।"

इंजीनियर देव बोला– "मैं आपके लिए महल बनाकर दे सकता हूँ।"

डाक्टर देव बोला–"मैं आपके नाम से बड़े-बड़े अस्पताल खुलवा सकता हूँ।"

नहीं, मुझे कुछ नहीं चाहिए। मुझे बस काम चाहिए, काम।" जानी ने चीखकर कहा।

जानी को काम मिल गया। अपनी मेहनत के बल पर उसने एक आलीशान मकान बनवाया। वह वेटर था, लेकिन लोग उसकी इज्ज़त करते थे। एक सुंदर जिप्सी लड़की ने उससे शादी कर ली। उसके लिए जानी ने सोने के ढेर सारे आभूषण बनवाए। उसे अपनी कमाई पर गर्व था।

लोग कहते थे कि जानी को अगर अकल होती, तो वह देवों से सोना-चाँदी माँगता। आलीशान महल बनवाता और लोगों पर शासन करता। पर वह किसी की परवाह नहीं करता था।

एक दिन जानी के घर से जादुई ताले की चाबी गुम हो गई। दुखी होने की बजाए, जानी दम्पती को इससे बड़ी खुशी हुई। लालच का झंझट ही खत्म हो गया था। उसने बहुत पैसा कमाया, आलीशान होटल खोले। अपने समय में शहर का सबसे धनी व्यक्ति था जानीसेक।

(एक जिप्सी लोककथा)

8

[illegible] के रंग

अंडमान को कभी काला पानी कहा जाता था। वहाँ कई जन-जातियाँ रहती हैं। जाखा आदिवासी आज तक रहस्य बने हुए हैं। सेटिनल जन-जाति के लोग आदमी को देखते ही जहर बुझे तीरों की वर्षा शुरू कर देते हैं। वे बड़े खूँखार होते हैं। लेकिन उसी द्वीप में कुछ ऐसे आदिवासी भी हैं, जो शांतिप्रिय हैं। मध्य अंडमान में ऐसा ही एक आदिवासी कबीला पाया जाता है।

उस कबीले के मुखिया के तीन लड़के थे। सबसे छोटा बड़ा शैतान था। उसका नाम था शुवान। वह बहुत तोड़-फोड़ करता रहता था।

एक दिन आदिवासियों की बस्ती में कोई चित्रकार आया। उसकी दाढ़ी बढ़ी हुई थी। उसके एक हाथ में लंबी कूची थी। दूसरे हाथ में कई प्रकार के रंग। वह एक पेड़ की छाया में बैठ गया। उसने जल रंगों से भोज-पत्रों पर चार चित्र बनाए। गीले चित्रों को सूखने के लिए धूप में रखकर दूसरा चित्र बनाने लगा।

वह पाँचवाँ चित्र बनाने के लिए कुछ सोच ही रहा था कि अचानक उसका ध्यान पहले बनाए चित्रों की ओर गया। पास जाकर देखा, तो उसे अपने चित्रों के टुकड़े-टुकड़े मिले। चित्रकार का मन रो उठा। उसके चित्र देवताओं को समर्पित थे। वह सोचने लगा– ''कहीं कुछ कमी तो नहीं रह गई। कहीं देवता तो नाराज नहीं हो गए।''

कलाकार परेशान था। तभी मुखिया का लड़का आकर उसके पास खड़ा हो गया।

कलाकार ने उसकी ओर देखा, तो वह बोला– ''मैंने ही तुम्हारे भोज पत्रों को फाड़ा है।''

–''लेकिन क्यों फाड़ा तुमने?''



लड़के ने कहा– ''सब बेकार की चीज़ें लग रही थी।'' फिर हँसकर वहाँ से भाग गया।

चित्रकार की आँखें डबडबा आईं। वह उदास होकर वहाँ से चला गया।

उसी शाम मुखिया का लड़का अपने चाचा के साथ समुद्र तट की ओर जा रहा था। चाँदनी रात थी, लेकिन कभी-कभी बादल घिर आते और अँधेरा छा जाता। जंगल की साँय-साँय से भय का वातावरण बना हुआ था।

अचानक शुवान ने देखा कि चाचा कहीं गायब हो गए। आसपास खड़े पेड़ विचित्र किस्म के थे। किसी का तना कटा था। तो किसी के फल आधे थे। उस जंगल में शुवान पहले कभी नहीं आया था। वह भय से काँपने लगा।

तभी कुछ जंगली जानवर उसके पास से गुजरे। शुवान ने देखा, किसी का मुँह आधा था, तो किसी का धड़ गायब।

''चाचा, चाचा.....''– शुवान चिल्लाया। पर उसकी मदद के लिए कोई नहीं आया। शुवान बड़ी तेजी से आगे बढ़ा। तभी एक पत्थर से ठोकर लगी और वह गिर पड़ा। वह फिर चीखा, लेकिन वहाँ कोई नहीं था।

एकाएक चाँद की मद्धिम रोशनी में उसने भोज-पत्र के कुछ टुकड़े देखे। शुवान ने बढ़कर टुकड़ों को उठा लिया। ये वही टुकड़े थे, जिन पर चित्रकार ने देवताओं के चित्र बनवाए थे। वह फटे चित्रों को जोड़ने लगा। फिर चट्टान पर वैसे ही चित्र बनाने का प्रयास करने लगा। पर उसके पास जल रंग कहाँ से आते। इसलिए कंकड़ से ही चित्रों को बनाने की कोशिश कर रहा था। शुवान अपने किए पर दुखी था। वह मन-ही-मन कह रहा था– ''मैंने चित्रकार का दिल क्यों दुखाया? इतने अच्छे चित्रों को क्यों फाड़ा?

शुवान रोते-रोते कुल देवता से प्रार्थना करने लगा। उसके पिता भी अपने कुल देवता को याद किया करते थे।

शुवान ने देखा; एक जलपरी पानी में बार-बार उछल रही है। वह उसकी ओर बढ़ा।

''घबराओ नहीं शुवान। इधर आओ, मैं तुम्हें रंग देती हूँ। चित्रकार से भी बढ़िया। लेकिन वादा करो, फिर कभी किसी कलाकार का दिल नहीं दुखाओगे।....'' जलपरी ने कहा।

''नहीं, अब ऐसा कभी नहीं करूँगा। मुझे जल रंग दीजिए। मैं वैसे ही चित्र बनाने की कोशिश करूँगा।'' –शुवान के स्वर में आग्रह और पश्चाताप का भाव था।



परी ने भाँति-भाँति के जल रंग उसे दे दिए फिर वह अदृश्य हो गई। शुवान ने देवताओं के चित्रों में रंग भरे। वह काफी देर तक इस काम में लगा रहा। उसने किसी को अपनी ओर आते देखा। वह चाचा थे।

"चाचा, चाचा! तुम कहाँ चले गए थे?"

—शुवान अधीर होकर बोला।

"बेटा, मैं एक जंगली जानवर का पीछा करते हुए आगे निकल गया था। जब मुड़ा, तो तुम नहीं मिले। मैं इतनी देर से तुम्हें खोज रहा हूँ।

—चाचा ने कहा।

शुवान ने सारा किस्सा सुनाया। जलपरी की बात भी बता दी।

चाचा उसके साथ बस्ती की ओर लौट चले। अब उसे न कटे-फटे वृक्ष दिखाई पड़ रहे थे और न ही कटे-फटे पशु। सारा वातावरण ठीक हो गया था।

अगले दिन शुवान उन चित्रों को चित्रकार के पास ले गया। उसने जलपरी वाले रंग भी उसे सौंप दिए। क्षमा माँगी कि भविष्य में वह ऐसा कभी नहीं करेगा।

नए अनोखे रंगों को देखते ही चित्रकार प्रसन्न हो उठा। वे रंग अद्भुत थे। उसने शुवान को क्षमा कर दिया।

(अंडमान की आदिवासी लोककथा)

9

पावी लोककथा

एक बार पावी जनजाति का एक युवा शिकारी अपने ही गाँव की किसी वन्य सुन्दरी पर मुग्ध हो गया। प्रेम गहराता गया और विवाह की तिथि तय कर दी गई।

पावी प्रेमी-प्रेमिका विवाह की तिथि की प्रतीक्षा में और भी अधीर होते गए और झूम खेतों में छुप-छुप कर मिलते। झूम खेती आज भी कई क्षेत्रों में किसी न किसी रूप में विद्यमान है।

एक दिन बड़ी गर्मी थी। लड़की को जोर की प्यास लगी। उसने अपने प्रेमी से कहा कि वह पास के खड्ड पर जाकर अपनी प्यास बुझाना चाहती है। शिकारी ने उसे वहाँ जाने से मना किया क्योंकि उसे पता था कि वहाँ के पानी में कुछ जादू है जो व्यक्ति का रूप बदल सकता है।

युवती ने प्रेमी की सलाह मान ली किंतु अपनी प्यास पर काबू न पा सकी। वह उसी खड्ड पर पहुँच गई। उसने अंजुली भर कर पानी पिया और अपने प्रेमी के पास लौट आई।

प्रेमी अपनी प्रेमिका से अगले दिन मिलने के बारे में कुछ कहने ही वाला था कि अचानक प्रेमिका का रूप बदलने लगा। पहले उसके पाँव लंबे हुए फिर हाथ और फिर उनके चार पाँव बन गए। नाखून बड़े-बड़े हो गए और देखते ही देखते वह बाघ बन गई। जंगल का खूँखार बाघ। शिकारी घबरा गया। अपनी प्रेमिका को इस रूप में देखकर उसका हृदय विषाद से भर गया। उसे प्रेमिका पर क्रोध भी आया। उसने उसे उस खड्ड का पानी पीने से मना किया था। किंतु बहुत देर हो चुकी थी। क्या करता बेचारा। माथा ठोक कर घर की तरफ चल पड़ा। उसकी बाघ प्रेमिका भी पीछे-पीछे चलने लगी। लेकिन उसे गाँव में कैसे रखा जाता अतः पास के जंगल में छोड़ आया।





इस घटना से गाँव से सब लोग आश्चर्यचकित थे। लडकी के माता-पिता तो बहुत ही दुखी थे। उन्होंने अपने पशु बाघ लड़की को खाने के लिए भेजने शुरू किए। वह पूरा पशु एक या दो दिन में खा जाती। आखिर पशुओं की संख्या घटने लगी। उसने आदमियों का शिकार करना भी शुरू कर दिया।

गाँव के लोग घबराए हुए थे। उन्होंने बाघ लड़की को मारने की योजना बनाई। एक-दो बार कुछ शिकारी उसके पीछे दौड़े लेकिन सफलता न मिल सकी। एक शिकारी तो खुद उसका शिकार हो गया।

जंगल के हिंसक पशु घबराए हुए थे। गाँव के पशु तो पहले ही समाप्त हो गए थे। अब जंगल के पशु भी खत्म होने लगे। तूफान-सा मचा हुआ था। लोग त्राहि-त्राहि कर उठे।

आखिरकार गाँव के लोगों ने निर्णय किया कि बड़े शिकारी को ही यह काम सौंपा जाए। गाँव का मुखिया पंचों को लेकर उसके घर गया। उसने अनुरोध किया कि वह बाघ को यथाशीघ्र मार भगाए। शिकारी परेशान था। क्या उसे अपनी प्रेमिका का ही शिकार करना पड़ेगा? उसने गाँववालों से कहा— "मुझे गाँव से निकाल दो लेकिन यह जघन्य कर्म मुझसे न कराओ। मैं अपनी प्रेमिका को नहीं मार सकूँगा। भले ही वह बाघ बनकर पशुओं तथा आदमियों का शिकार कर रही हो।"

गाँव के लोगों ने कहा, "लेकिन वह अब तुम्हारी प्रेमिका कहाँ रही? वह तो क्रूर हिंसक पशु है जो अबला, वृद्ध सबको खाए जा रही है। कल हम भी जिंदा नहीं बचेंगे और एक दिन तुम भी उसके शिकार बन जाओगे।"

शिकारी तर्कों के आगे नहीं झुका। तभी एक वृद्धा आदिवासिन दौड़ी-दौड़ी आई। उसने कहा— "शिकारी बेटे, अब हमसे नहीं सहा जाता। तुम्हारी प्रेमिका बाघ पहले मेरे पशुओं को खा गई, फिर मेरे पति को और आज मेरा इकलौता बेटा भी उसकी बलि चढ़ गया। क्या अब भी तुम उस पर तरस खाते रहोगे?

शिकारी विवश था। उसने अपने शस्त्र उठाए और जंगल की ओर चल पड़ा। वह दुखी था। अपनी ही प्रेमिका का शिकार। लेकिन वह प्रेमिका कहाँ रही। वह तो स्वयं शिकारी बन गई है। आखिर एक शिकारी ने दूसरे शिकारी की जान ले ही ली। बाघ-प्रेमिका सदा के लिए सो गई। कुछ लोगों का कहना है कि शिकारी भी अपार दुख को सहन न कर सका और स्वयं वहीं अपने को भी ढेर कर दिया।

आज भी पावी जनजाति में इस लोकगाथा को बड़े दर्द के साथ स्मरण किया जाता है।

(एक पावी लोककथा)

10

लोमड़ी माँ

बहुत घने जंगल है। उन जंगलों में आदिवासी रहते हैं। वहाँ उनके
त्र बसे हैं।

त्रनों में शेर, चीते और भालू आज़ादी से घूमते हैं। छोटे-छोटे बच्चों
। जाना उनके लिए मामूली-सी बात है। वहाँ साँप और बिच्छू तो
ग्र मिलते हैं। इसीलिए कुछ आदिवासी लाठियों पर नदी की तरह
लाठियों में दो-तीन फुट ऊपर टैकें लगी रहती हैं। इन पर उनके
ते हैं।

त पुरानी बात है। एक लोमड़ी काठियावाड़ा गाँव में घुस गई। गाँव
खेतों और जंगलों में गए हुए थे। कोई माँ अपने बच्चे को चटाई पर
से घास का गट्ठर लेने चली गई। वापस आने पर देखा, तो बच्चा

माँ रोती-पीटती बच्चे को ढूँढने निकल पड़ी। लेकिन बच्चे का कुछ
।। गाँव के लोगों को खबर मिली तो वे भी परेशान हो गए, आखिर
कहाँ गया? कई लोग जंगल में भी गए। वहाँ खोजबीन की। लेकिन
नहीं चला।

में उस बच्चे को वह लोमड़ी ले गई थी। किसी की नजर उस पर न
त्ते ने उसे देखा था। वह उसके पीछे दौड़ा भी। जब तक कुत्ता पास
ी बच्चे को ले, संकरी गुफा में घुस गई।

अकेली थी। उसे बच्चा बड़ा प्यारा लगा। उसे बड़े प्यार से वह
अपना दूध पिलाती। रोता तो करतब दिखा-दिखाकर उसे
च्चा लोमड़ी को ही अपनी असली माँ समझने लगा।



मास-दो-मास और फिर साल बीतने को आया। बच्चे की असली माँ ने संतोष कर लिया था। मगर लोमड़ी उसे अपने कलेजे का टुकड़ा समझने लगी थी। खुद भूखी-प्यासी रहती, लेकिन अपने लाडले को सदा खुश रखती।

धीरे-धीरे बालक अपनी लोमड़ी माँ की तरह हाथ-पैरों पर चलना सीखने लगा। वह हाथों को भी पाँवों की तरह जमीन पर रखता। चौपाए की तरह छलाँगें भरता।

लोमड़ी बड़े प्यार से उसे अपने पास बुलाती। अपने साथ जंगल में ले जाती। शिकार करना और शिकार होने से बचना सिखाती। नंगधड़ंग बालक उसके साथ बंदर की तरह पड़ा रहता। उसे न सर्दी में जुकाम होता और न ही गर्मी महसूस होती। वह पूरा जंगली बनता जा रहा था।

एक दिन कुछ शिकारी जंगल से गुजर रहे थे। अचानक उन्होंने लोमड़ी और चौपाए बालक को देखा, तो हक्के-बक्के रह गए। एक शिकारी उनकी तरफ दौड़ा, मगर लोमड़ी तुरंत बच्चे को ले, पास की घनी झाड़ियों में लोप हो गई।

शिकारियों ने कई घंटे तक उनकी तलाश की। हारकर वे गाँव में आए। लोमड़ी और उसके विचित्र बच्चे के बारे में कई लोगों से पूछा गया। कुछ पता न लगा।

अब गाँव के लोगों में भी चर्चा होने लगी। आखिर लोमड़ी के साथ कौन रहता है? लगता तो आदमी का बच्चा है, उसके पास कैसे पहुँचा। पास के कई गाँवों में यह खबर फैल गई। गाँव के प्रधान ने कहा कि जो उस चौपाए बालक को पकड़कर लाएगा, उसे अच्छा-खासा इनाम दिया जाएगा।

गाँव के पास ही आदिम जाति सेवक संघ का आश्रम था। वहाँ पहाड़ी आदिवासी जातियों के बच्चे पढ़ते थे। एक दिन उनके अध्यापक जंगल की तरफ जा रहे थे। तभी उन्हें यह बच्चा अपनी लोमड़ी माँ के साथ घूमता दिखाई दिया। मास्टर जी ने शोर मचाया—"मिल गया, दौड़ो। वह भागा, वह भागा।"

कुछ बड़े बालक मास्टर जी की सहायता के लिए आए। लोमड़ी और उसके विचित्र बच्चे को चारों ओर से घेर लिया। लोमड़ी तनकर खड़ी हो गई। मास्टर जी समझदार थे। उन्होंने माँ की ममता पहचानी। लोमड़ी के पास बड़े प्यार से गए। कुछ खाने को दिया और फिर बच्चे को पकड़ने आगे बढ़े।

उसी समय लोमड़ी बालक मास्टर जी को काटने दौड़ा। बड़ी मुश्किल से उसे पकड़कर आश्रम लाया गया। लोमड़ी भी उनके साथ-साथ आई। उसने कई दिन तक अपने बच्चे के वियोग में खाया पीया भी नहीं। आश्रम में कई दिन तक



उसे देखनेवालों की भीड़ लगी रही।

मास्टर जी उस लोमड़ी बालक को स्नेह से पालने लगे। उसे बड़ी कठिनाई से दो पाँवों पर चलना सिखाया गया। पहली बार जब उसे कपड़े पहनाए गए, तो वह उन्हें अपने नाखूनों से फाड़ने लगा।

एक दिन वह फिर जंगल में जाने के लिए मचल उठा। मास्टर जी के घर से भाग निकला। सारे आश्रमवासी परेशान हो गए। आश्रम के संचालक और उनकी पत्नी ने तो कई दिन तक कुछ खाया पीया तक नहीं।

एक दिन बड़ा करिश्मा हुआ। संचालक अपने घर में थे। अचानक बाहर शोर मचा– ''लौट आया। लौट आया।''

संचालक और उनकी पत्नी दौड़े-दौड़े बाहर आए। सामने देखा, तो पुलक उठे। लोमड़ी बालक लौट आया था।

अब वह कहीं नहीं भागता। आश्रम के दूसरों लड़कों की तरह पढ़ता लिखता है और कबड्डी देखता है। पर कभी-कभी लोमड़ी की तरह ''चीखने-चिल्लाने'' की हुड़क उसे जरूर होती। कुछ लोग प्यार से उसे मास्टर लोमड़ी सिंह के नाम से पुकारते थे। अब तो वह शेर सिंह है।

(मध्यप्रदेश की एक लोककथा)

11

बन्नो

हिमालय की गोद में एक गाँव था। वहाँ गद्दी जाति का एक किसान अपने रेवड़ के साथ जा रहा था। वह बहुत ही अच्छी बंसी बजाता था। उसकी बंसी को सुनकर भालू और शेर भी शिकार करना भूल जाते थे।

मौसम साफ़ हो गया था। बर्फ पिघल चुकी थी। वह बंसी बजाता आगे बढ़ रहा था।

अचानक गड़गड़ाहट की आवाज़ हुई। एक बिजली-सी चमकी और चारों ओर अद्भुत प्रकाश छा गया, सोने के रंग जैसा। किसान ठगा-सा रह गया। उसने देखा, सामने की एक पहाड़ी फट गई है। जहाँ से पहाड़ी फटी, वहाँ एक कंदरा बन गई थी।

किसान की बंसी उसके ओठों पर ज्यों-की-त्यों ठहर गई। वह उस जादू भरे दृश्य को देखने लगा। उसने देखा, सामने एक सुंदर स्त्री खड़ी थी। उसने काले रंग की घघरिया पहन रखी थी। सिर पर लाल रंग का दुपट्टा बाँध रखा था। उसके हाथों के स्थान पर मोर के पंख थे।

किसान भयभीत था। तभी वह बोली— ''मैं बन्नो देवी हूँ। तेरी बंसी ने मुझे मोहित कर लिया है। घबरा मत। मैं तुझे बहुत-सी भेड़-बकरियाँ देती हूँ। लेकिन यह घटना किसी को मत बताना। हाँ, मेरे नाम का एक मंदिर यहाँ जरूर बनवा देना।''

बन्नो देवी यह कहकर अंतर्धान हो गई। किसान ने देखा कि पहाड़ी की उस कंदरा से एक के बाद एक भेड़-बकरियाँ निकलती आ रही हैं। उसने सोचा— ''इतना रेवड़ मैं क्या करूँगा? क्यों न अपने गाँववालों को भी बाँट दूँ।''

पहले तो किसी को विश्वास नहीं हुआ। लेकिन बाद में सभी बूढ़े-बच्चे उसके साथ हो लिए। वे गुफा के पास पहुँचे। तभी एक गड़गड़ाहट हुई। जितनी



भेड़-बकरियाँ कंदरा से निकली थीं, उसी में वापस चली

बात-की-बात में रेवड़ की जगह शिलाएँ नज़र आने लगीं। लोभ में फँसा सारा गाँव वापस लौट गया। वह किसान उदास था। उसकी बंसी भी कहीं खो गई थी। हाँ, बच्चों को कुछ बकरियों के बच्चे ज़रूर मिल गए।

इन बच्चों ने बड़े होकर एक मंदिर बनवाया। बन्नो देवी अमर हैं। हिमाचल प्रदेश में उनकी पूजा की जाती है। गाँव के लोग आज भी उस घटना को दोहराते हैं। गाँववालों का विश्वास है कि अगर वह किसान गाँववालों को न बताता तो उसे भेड़ बकरियाँ मिल जातीं।

(एक गद्दी लोककथा)

a good one it does do this, but unfortunately there is water given off as steam from the skin, this passes through our clothes, if they are the right sort, and disappears into the air. If we wear a mackintosh on top of our clothes this steam cannot get through and collects on the inside of the mackintosh. If the mackintosh prevents water from passing through, it also prevents the air from getting inside and getting through the clothes underneath it and reaching the skin Many mackintoshes have little holes put in them under the arms to let the air in, but, on the whole, a mackintosh should only be worn when you are out in the rain and should be taken off as soon as it stops raining

Here are three most important rules for you to remember.

(1) *Don't wear too many clothes.*—You should only wear enough clothes to keep the body warm. Every extra garment you put on hinders the air from reaching the skin, and if you wear too many of them even out of doors it is just as bad as living in a stuffy house

(2) *Don't wear tight clothes.*—Every garment should be loose enough to let plenty of air get inside it.

(3) *Hang your clothes up when you take them off*—Clothes that have been worn are slightly damp. They should be hung up so that the air can reach them and dry them before they are worn again, so never roll your clothes up and put them in a drawer when you take them off. Let them "air" first.

Bedtime.—In cold weather, many people go to bed and keep on under the nightgown or pyjamas the vest they have worn all day. This is a bad habit; the vest that has been worn during the day should be spread out to air during the night and if necessary another vest should be used at night. In the morning, the nightgown and sleeping vest should be "aired" before they are folded up When you make your beds, do you put the clothes back over the beds as soon as you get out of them? If you do, you are doing the wrong thing, because the bed clothes should be spread out to let the fresh air get to them, for at least half an hour before the bed is made.

What do you do with your bedroom window at night? Do you see that it is tightly shut or do you open it a little? It is far better to have the window slightly open, because then the cool night air creeps in gently and is very good for you. Town air at night has less smoke and less petrol fumes in it than it has during the day.

When you get into bed, do you pull the bed clothes over your ears and sleep covered up so that you can hardly be seen?

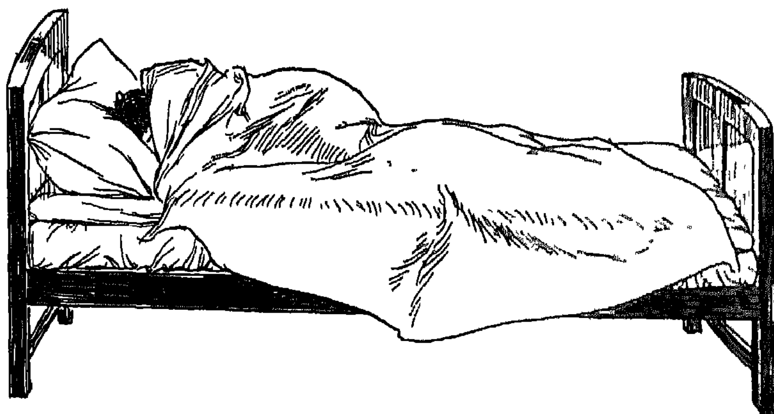


FIG. 21A. DO YOU SLEEP LIKE THIS?

There are some animals that do something like that every winter Have you ever seen a hedgehog or a tortoise? Both these animals go to sleep for the whole winter; they find a comfortable place in a bed of leaves or a hayrick and burrow into it until they are completely covered over, and there they stay all the winter, fast asleep, and only just breathing. Human beings should not behave like this, but some children pretend to be hedgehogs when they go to bed and nearly cover themselves completely with bed clothes, and this is very bad for them. *Be sure you do not cover your face with the bed clothes.*

TEACHING NOTES

1. Stagnant air and "fresh" air contrasted.—

Indoor Air.	*Outside Air.*
(*a*) High percentage of water vapour.	Relatively low percentage of water vapour.
(*b*) Motionless	Moving
(*c*) Liable to overheating.	Not so easily overheated.
(*d*) No sunshine	Possibility of sunshine.

2. Cool, dry circulating air makes for—(*a*) immunity from catching cold; (*b*) full elimination of sweat; (*c*) moderation of body temperature.

3. "Stale" air—(*a*) renders liable to catching cold, by retarding the reactions of the skin; (*b*) encourages the accumulation of sweat in clogged pores, (*c*) overheats the body

4. "Fresh" air.—It is therefore important to secure cool, dry, circulating air. This can be done to a certain extent by the following means:

(*a*) Living as much as possible out of doors. (Lessons out of doors, if possible, in summertime)
(*b*) Assisting the ventilation of rooms by a judicious use of open windows.
(*c*) Controlling clothing in the best possible way.
  (i) By not wearing tight clothes.
  (ii) By not wearing too many clothes (day or night).
  (iii) By suitable choice of clothing.
  (iv) By immediate removal of sweat soaked garments (see lesson on Skin).

PART II.

Sunshine.—Supposing there was no sun to shine upon the earth! Can you imagine what a dreadful place it would be? To

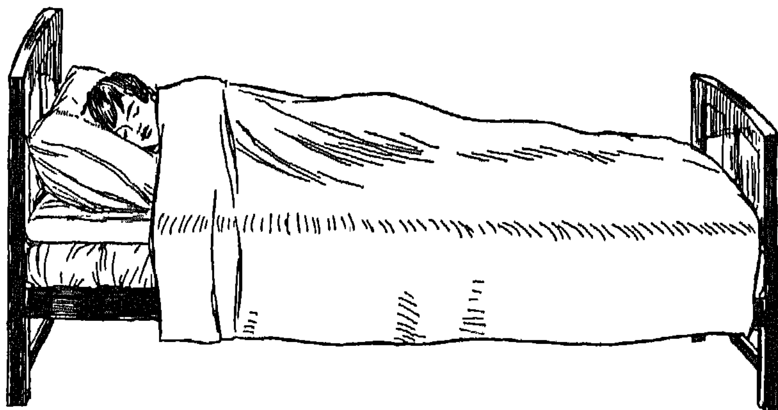


FIG 21B OR DO YOU SLEEP LIKE THIS?

begin with it would be quite dark There would not only be no sunlight but there would be no moonlight, for the moon gets its light from the sun. The only light there would be would come from the stars, but they are so far away, their light is very faint. It would be a cold world too, colder even than ice; not only would water freeze but every living thing would die, for no one could live for more than a short time in such a world. It would be far colder than it is during a winter's night, because even in the coldest weather, after the sun has set, the earth still holds some of the day's warmth in it.

If there were no sun there would be no living plants on the earth, no grass, no trees, no vegetables. Think how serious that would be. Just think of the last meal you had and try to count how many plants went to the making of it (Bread, porridge, jam or marmalade, tomatoes, tea, coffee or cocoa, potatoes, peas, cabbage, etc) Hundreds of plants eaten at one meal! None of these plants could grow without the help of sunlight You can soon see that for yourself if you turn over a stone that has been lying on the grass for some time. The grass is quite white and has not grown properly.

The sun has another power too: it can do wonderful things in the way of curing people who are ill There are floating in the air very, very small specks, much too small to be seen, called germs. If people are well, these germs do not harm them, but if people are not looked after properly these germs may be very harmful. The sun has a wonderful power of killing off some of the worst of these germs, so that the more sunlight there is the healthier the people are.

You may ask how it is that the sun can do this.

Suppose you sit in front of a fire, you can see the firelight quite easily. The fire is either glowing red or it has little yellow and blue flames in it. If you shut your eyes you still know you are in front of a fire because you can feel the warmth on your face and hands. So the fire gives two things, light and warmth. If you put a plate of butter in front of the fire, it will melt, and if you put a piece of bread in front of the fire, it will turn into toast; so the fire has the power to change things. The fire is giving out what are called rays, so if you made a drawing of the fire and drew a large number of straight lines coming out of the fireplace and touching the things in the room, you would be drawing the path of the rays of heat and light and energy that the fire gives out.

If you think of the sun as a very special kind of fire, enormously big, but so far away that it looks small, giving off rays of light and heat and energy in all directions, you will see why it is so important to us

The rays from the sun are not all visible as light, only some rays can be seen, the heat rays can be felt but not seen. You remember when you shut your eyes in front of the fire you could feel the heat although you could not see it. Still less can you see the rays of other kinds of energy—the rays that give you sunburn, or freckles, or fade the carpets and the curtains, and take photographs when you open the shutter of a camera. All these rays come pouring out of the sun together and fall on everything that is facing it.

What colour is the light? It is difficult to say. Mostly white, or sometimes yellow. People talk about "golden" sunlight, and sometimes at sunset time the light that falls on the houses and the hills is red or purple. Really, light is made of seven colours, and when they are all mixed together they are white. Sometimes they get separated and spread out, and then you can see how many colours there are. A piece of glass with sharp angles (prism) can spread the rays in much the same way as you could open a fan.

(Demonstrate with prism and sunshine if possible)

When the fan is shut up you can see only the sides, and when you spread it out you can see the pictures and the colours in it So with the sun, when the rays are all

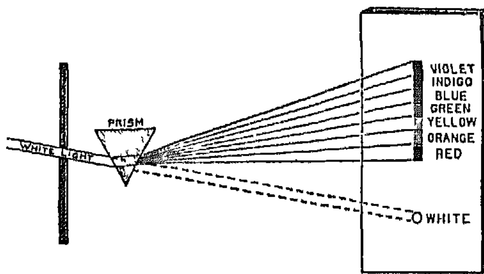


FIG 22 REFRACTION AND DISPERSION OF SO-CALLED "WHITE" LIGHT BY A PRISM

on top of one another the light looks white, but when the piece of glass spreads them out they show seven colours: red, orange, yellow, green, blue, indigo and violet. You can see the colours of light when you see a rainbow, because when sunlight shines on falling drops of water it is spread out like a fan, and if you are standing in the right place you can see the colours If you want to see a rainbow you must stand with falling drops of water (rain, spray or mist) in front of you and the sun behind.

In towns a great deal of the sunlight is prevented from falling on people who need it. Can you think of anything that keeps the sunshine out?

Have you ever stood on a hill outside a town and looked down on the chimneys on the housetops? Each chimney is giving out smoke when the fire is lit. Sometimes there are factories with tall chimneys which are pouring out great clouds of smoke. How many trains do you think run through the station in one day? Every one of these gives off smoke, steam and smuts. This smoke hangs about over the town and makes a screen which keeps off the sun.

In towns the houses are built close together Sometimes they are built in rows all touching one another; they have no gardens and there is another row of houses exactly the same on the other side of the narrow street. Very little sun can get into these streets. Some people say that the sunlight fades their carpets and curtains, so they shut the windows and doors, and pull the blinds and the curtains across the windows. That keeps the sun out of the house, but if they want to keep healthy, these people must not stay all day long inside the house with the sun kept out, but must go out and get into the sunshine

Clothes keep the sun off our bodies. We have to wear clothes to keep us warm. In hotter countries, people wear fewer clothes and get much more sunshine. Many people wear far too many clothes. They think they must have many layers of clothes to keep them warm, and really they are making it quite impossible for the sun to reach their skin.

Nowadays people are beginning to realise how valuable the sun is and are doing a great deal to give everyone as much sunshine as possible

One of the best ways to get sufficient sunshine is to go out of the towns as much as possible In the towns, only about one quarter of the sunshine gets through the smoke At the seaside about half the sunshine reaches the ground, but on the mountain tops nearly all the sunshine gets through the clouds and reaches the earth. That is why people in need of sunshine are often sent to Switzerland The mountains in Switzerland are so high that they reach higher than the clouds and so get a great deal more sunshine than we can have in England.

There are other places where people can get sunshine nowadays (Explain open air schools, sanatoria, sun-bathing, etc.)

In summer the sun rises very early, and on fine days there may be several hours of sunshine before we get up in the morning At one time this was all wasted, because very few people except farmers and milkmen got up early enough to make use of it, so the Government made an Act of Parliament and said that in summer everybody was to get up an hour earlier, and to make sure that they did it, all watches and clocks had to be put forward one hour. This is what we call "summer time."

In England there are sometimes many days when the sun does not shine, and if

people are poorly they sometimes require sunshine urgently, so the doctors have invented a special kind of lamp that gives off a light as nearly as possible like sunshine. This artificial sunlight can be used to supply the needs of sickly people. Those of you who live in London and can go to the Zoo should go and look at the monkey house there. Those little monkeys, who have come from foreign countries where there is a great deal of sun, find this country too difficult for them to live in, so the people who look after the Zoo have given them artificial sunlight lamps, and you can see the little monkeys sitting happily in the lamplight.

When you realise how important sunshine is you will make a habit of going into the sunshine wherever you can find it. People who live in the sun are happy and have contented smiling faces.

TEACHING NOTES

1. What does the sun do?—Write this list of action words on the blackboard:—

Lights.
Warms.
Makes plants and animals grow.
Cleanses.
Cures.

2. How does the sun do all these things?—Because it is a flaming mass of vapour giving off rays of energy in the form of heat, light and chemical activity.

Demonstrate:—(*a*) The effect of light on vegetation by plants grown in the dark and in the light, or by a stone left on the grass. (*b*) The splitting of visible light into the spectrum by a glass prism.

3. Interference with sunlight.—Let the children co-operate with the teacher to prepare a summary of the things which prevent sunlight from reaching us:—

Smoke
Crowded houses.
Narrow streets.
Closed windows with the blinds and curtains drawn.
Too many clothes.

4. Remedial measures.—Prepare a further summary of some of the modern means adopted to procure all the sunshine possible:—

Town planning.
Sanatoria.
Open air schools.
Sun-bathing.
Artificial sunlight.
Daylight saving.

IV. POSTURE

INTRODUCTION

THE chief points of the teacher's introduction to this lesson are here set out in the form of a summary.

Value of a good carriage.—

Keeps the internal organs in the right position and in right relationship one to another
Improves breathing.
Minimises fatigue.
Makes a mentally and physically alert child with a pleasing appearance.

Marks of a good carriage.—

Vertical spine.
Erect head.
Chin drawn in
Abdomen drawn in

Shoulders well back but not lifted.
Chest lifted
Knees straight

Common faults in carriage.—

Hollow chest
Round shoulders.
Chin poking forward
Slouching gait.
Bent knees.
Hunched-up shoulders.
Hollow back

Causes of defects in carriage.—

Reading in a bad light, or in a crooked position.

Short sight uncorrected by glasses.

Sitting in desks of the wrong size and shape.

Standing with the weight on one foot (often because the child has been kept standing too long).

Sitting with arms folded across the chest

Correction of bad posture.—

Make sure that the desks are, as far as possible, the right size and shape for the children

When the child is not writing or doing anything with his hands, he should be taught to sit straight up in the desk, with both feet on the floor, the spine resting comfortably against the back of the desk, the head up and chest expanded.

To give a child an idea of the correct standing position, it is best to make him stand up against a wall, with the feet six inches in front of the wall and the back pressing firmly against it. The object is to bring every part of the spine in contact with the wall. If the teacher then gently pulls the child into a vertical position without allowing him to move his feet, he will learn to maintain an erect spine when standing naturally.

Teachers should see that the children step out of their desks when they stand up in class It is a good plan to suggest to children that they should stretch upwards as if they were trying to make themselves grow as tall as possible. The practice of this habit will encourage the assumption of a correct standing posture.

Posture in walking.—A child walks badly if.

It drags its feet (This may be due to improperly fitting shoes)

Walks with head bent as if seeking something on the floor.

Slants the body line forwards with the head poked out in front.

Walks with the knees bent.

Walks jerkily or heavily

Good walking consists in making the maximum progress with the least expenditure of energy and muscular effort There should be a certain amount of natural spring in the walk. Muscular control should be exercised in such a way as to prevent the weight of the body from falling heavily on the foot at each step On the other hand, an exaggerated spring involves waste of energy and makes an objectionably jerky walk.

How to encourage good posture in walking.—

A correct walk may be induced by drawing a long straight chalk line on the classroom floor and making the children walk so that at each step the inner side of the foot lies as nearly as possible parallel to the chalk line on the floor, i e the child should be encouraged to walk with the feet pointing straight forward or only slightly divergent. The inner ankle bones must not rub as the feet pass each other, but on the other hand the feet must not be wide apart. The child should practise this exercise until he can walk properly without looking at the chalk line on the floor.

In walking, the heel must be put down first On no account should the foot be put down flat.

The body must not be held rigid in practising walking. A slight swing of the arms is a help, but it must not be allowed to induce a rolling movement of the body.

The rest of the body posture in walking is the same as that described for standing.

The importance of feet.—Babies' feet are perfectly mobile until the wearing of shoes begins to exercise a limiting effect. However well-fitting a shoe may be, the very fact of its texture induces changes in the mobility of the foot and a certain amount of cramping of muscular action. The constant wearing of shoes, and the all too common habit of wearing unsuitable shoes, is responsible for much evil

The small muscles under the foot are largely responsible for the maintenance of the natural arches of the foot. Any impediment in the free action of these muscles is, therefore, a precursor of *flat foot.*

Since there is considerable variation in the natural height of foot arches in individuals it is often quite wrong to suppose that a foot with an apparently low arch is necessarily flat. The term "flat-foot" implies that the arch has lost some of its support and is in danger of sinking, or has actually sunk from its original height. On the other hand, a foot with a considerable height to the arch may have sunk from an originally greater height, and may be in need of treatment as flat. It must be emphasised that it is no part of the teacher's duty to attempt the difficult diagnosis of flat-foot, nor is it her province to give remedial exercises when others have diagnosed a case of flat foot, but it is her duty to train children to take care of their feet and to suggest such simple exercises as will stimulate normal activity and help them to retain, as far as possible, that perfection of foot-mobility which is their birthright

Evils of ill-fitting shoes.—The wearing of ill-fitting shoes causes cramping of the foot leading to bad circulation in the lower limbs, and to cold feet. This interferes with the supplies of nourishment to the tissues, and results in the formation of chilblains and to general loss of muscular tone.

If this ill condition is persistent, it makes for inadequate foot activity. The burden of locomotion falls too heavily on knees and hips, giving an ungainly gait, and may eventually lead to other serious postural defects.

Flexibility and full muscular action of the feet may be encouraged by simple exercises which must be carried out by the children *after* they have removed their shoes.

(1) *Toe-flexion.* Alternately curl the toes downwards and stretch them forwards, spreading the toes as far apart as possible at each forward movement

(2) *Foot-inversion.* The children sit on the floor with the knees bent and the feet together. Then, letting the knees fall apart, turn the feet inwards until the soles are pressed as close together as possible with the outer borders in contact.

Keeping the feet in this position, the children should then straighten the knees as far as possible and hold the position for several seconds.

(3) *Foot-circling.* Let the children sit on the floor with the feet straight out in front of them and somewhat apart. Each foot is then made to describe as wide a circle as possible, keeping the heel on the ground as a pivot, and without any movement of the knees

(4) *Sole-contraction.* The children sit on the floor and let the knees fall apart. They then turn up each foot in turn so that they can see the sole. With the assistance of the hands they should endeavour to make the sole as hollow and cuplike as possible.

If these exercises are carried out in bare feet, the teacher may here find a natural opportunity of emphasising the importance of foot cleanliness.

Rubber shoes.—Apart from the general evils indicated above, unsuitable shoes lead to blisters, stubbed toes, hammer-toe distortion, lateral compression causing bunions and corns.

The advisability of the use of rubber plimsolls is a much discussed question. There is, of course, no truth in the common belief that the constant wearing of rubber shoes has an evil effect on the eyes. Rubber shoes do make for foot flexibility, which is of value, but their waterproof character proves a doubtful advantage in that it prevents the evaporation of sweat, and leads to foot troubles of another sort On the whole, therefore, it is wiser to discourage the use of plimsolls except for games and exercises

In dealing with the question of foot hygiene, it must be borne in mind that the choice of shoes does not often lie with the child It is more a matter of parental discretion (too often indiscretion), but some good may be done indirectly if the child is instructed in the kind of shoes that do least harm

The diagrams, Fig. 27 (page 46), may be useful in illustrating the right and the wrong sort of shoes to wear.

LESSON ON POSTURE

For children of nine years and over

A good carriage.—When you are going away for a holiday, you pack your bag the day before and put in it all your clothes and some of your precious toys that you want to take with you—your boat to sail on the sea, your fishing rod, a doll or two, and perhaps a toy engine. You find this bag is too heavy for you to carry, so someone else has to carry it. When you get to the station, the porter comes along, takes the bag and puts it in the carriage. Perhaps he swings it up to put it on the rack Now suppose he handles your bag roughly and drops it down heavily on the platform, or knocks it against another bag; or supposing it falls off the truck, what do you think will happen to the things inside? They will all be shaken up When you come to unpack you will find that the things inside your bag have changed their places What you placed so carefully on the top and hoped would not be crushed, is now pushed down the side of the bag with something else on top of it. Some of your toys may have been broken. Now, how did this happen? It was because the porter did not carry his load carefully and keep it in the right position.

There is one load that everybody has to carry for himself, and no one can carry it for anyone else. This load is a person's own body. There are right ways and wrong ways of holding the body when you move about or sit down, and, like your bag at the railway station, the body must not be moved roughly and must be held in the right position When the body is held properly and in the right position, a boy or girl is said to have a good "carriage" A good carriage is learnt only gradually, and requires care and patience.

If you think of the helplessness of a baby, you will see that it is quite unable to stand or to walk at first, i e it cannot carry the weight of its own body. It can only crawl It takes at least a year before baby attempts to stand on its own feet. If it stands on its feet before the legs are strong enough to bear the weight of its body, its legs become bent and it is called bow-legged When baby begins to walk it strides about unsteadily, with its feet wide apart, and its body bent forward, and it is always falling down. But, as it goes on trying, it improves, until it can stand easily and is not so prone to fall over. Even yet it may stand with its body slightly bent. Some children never get any further than this stage. They can stand up, but they don't stand *straight* up. They hold themselves in a bent position. Most children, however, manage to straighten themselves properly and hold themselves beautifully when they are five or six years

old, and then, when they go to school, they lose their straightness and begin to curl up again.

Why do you think it is better to hold the body straight than to allow it to become bent? There are many things inside us that are very important, the heart, for example, that pumps the blood round and round in the blood tubes, and the lungs that take in oxygen and give it to the blood, and many other parts of the body that work hard to keep us well and strong. Many of these parts move You can feel your heart beat, and you can feel your chest rise and fall as you breathe. All these movements can best be carried on if the body is straight. If it is bent, the parts inside are crushed over one another, and are not able to move freely. When children have finished growing, they have straight bodies or bent ones, according to whether or not they have taken care of them and practised keeping them straight If they have straight bodies when they stop growing, they may be very careful and keep them straight all the rest of their lives, but if children's bodies are bent when they stop growing, they will never be able to straighten them. The parts inside will not be able to work properly, and very soon they will begin to have things wrong with them, such as indigestion, heart troubles and all kinds of uncomfortable things. So it is very important to learn to have a straight body before you stop growing.

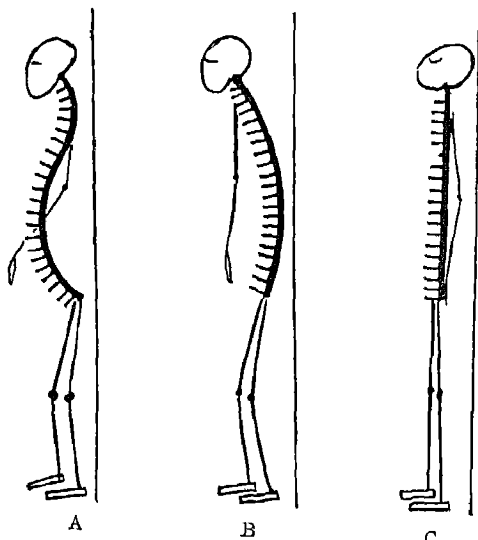


Fig 23 Do You Stand Like A, or B, or C?

Do you know whether your body is straight or not? In your back you have a long row of little bones, arranged something like a string of beads, and called the spine. You can feel some of these bony knobs at the back of the neck. If you have kept your spine straight, you ought to be able to stand against the wall and make every one of the little bony knobs touch the wall at the same time. Can you do this? Or do you find there is a space behind your waist, where you could put your hand in between you and the wall? Can you make the little bones in the neck and those in the waist touch the wall at the same time?

To do this you may have to put your feet a little bit forward from the wall. If you cannot do this at first, keep on practising and you will be able to do it by-and-by. When you can do it, you will have a nice straight spine. Try lying on the floor with the knees straight. Is there a hollow under your waist? Draw up the knees and flatten that hollow out.

The most important thing in good carriage is to keep the spine straight with all the little bony beads resting evenly one on top of another, and none of them overlapping or lying out of place.

It is just as necessary to keep the spine straight in sitting as in standing.

(Draw the diagrams on the blackboard.)

When you stand up, do you let the weight of your body rest on the heels or on the ball of the foot? The weight should be on the ball of the foot. Now see if you can stand properly.

Have you got:—

A vertical spine?
Both shoulders at the same level?
Chin and abdomen well drawn in?
Chest lifted (but *not* the shoulders)?
No hollow in your back?

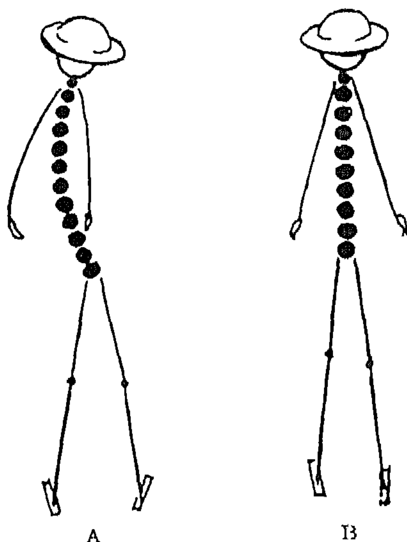


FIG. 24. WHEN PEOPLE SEE YOU WALKING, WHAT DO YOU LOOK LIKE—A OR B?

The feet.—When you stand, the weight of your body rests on the feet. If you have good feet and take care of them, your feet will always help you to stand well, and walk well, but no one can walk or stand properly if his feet are not comfortable. To keep your feet comfortable you should wash them every day and dry them carefully, especially in between the toes. Then you should change your stockings frequently. It is a great mistake to wear the same pair of stockings for several days. Feet need air just as much as the rest of the body

Then you should be careful of your shoes. To begin with, if your shoes are down at the heel, you cannot stand straight on your feet, you cannot keep your knees straight and you can neither stand nor walk properly. So it is most important to keep watch on your shoes and ask to have them mended as soon as the heels begin to wear a little. Shoes that are looked after keep their shape better and last longer than those that are allowed to wear out too far without being mended.

There are some kinds of shoes that are not good for children Little girls sometimes think that high heels and pointed toes are very nice to look at, but just look what they do to your feet.

When you go to buy new shoes take care to get them big enough and wide enough, and see that they have sensible heels. If you wear little high heels you may quite easily sprain your ankle

How to walk properly.—It is not enough to be able to stand straight and to sit straight, but you must be able to walk properly.

Suppose you were going to act the play of the *Sleeping Beauty*!

Now how do you think the princess would walk? She would walk lightly and gracefully with her head up and her back straight. She would not walk as if she were looking for threepenny bits on the ground. She would not walk with her head poking out in front as if her head could not wait for her feet. The prince, too, would carry himself straight. He would walk quickly, with his head well up, because he was a good prince and had nothing to fear. He would lift his feet and not drag them over the floor, and his shoulders would be straight and his

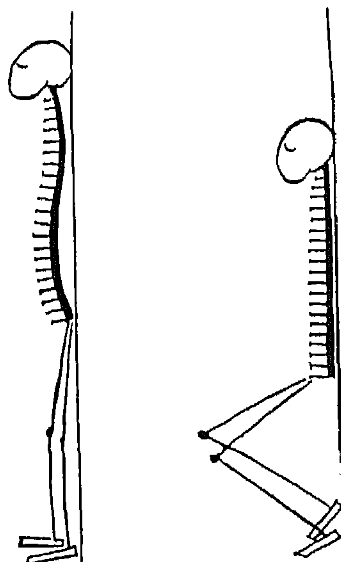


FIG 25 CAN YOU STRAIGHTEN YOUR SPINE IN THIS POSITION?

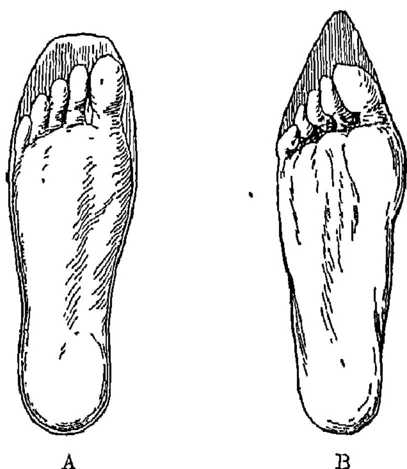


FIG 27 A. THE FOOT IN A PROPERLY SHAPED BOOT B THE CRAMPIN OF THE FOOT BY A BADLY FITTING BOOT

chest lifted If he had not walked like this, he would not have been the right man to find the princess

How do you think the good fairy walked? As lightly as thistledown Can you walk as lightly as thistledown floats in the air? See if you can walk without making any noise on the floor, but without screwing up your shoulders and opening your mouth wide.

How do you think the wicked old woman walked who kept the spinning wheel? She probably hunched her shoulders up and poked her head forward and bent her knees, and dragged her feet along the floor.

A walk shows character. What sort of character does your walk show? Is it upright? It is very often true that people with straight healthy bodies have good hearts and kind natures, and the troublesome, bad people are crooked in body and also in mind.

Supposing two boys applied for a post of office boy, and one held his head up and looked as if he were afraid of nothing, and the other slouched with his hands in his pockets and his shoulders bent, which boy do you think would get the post?

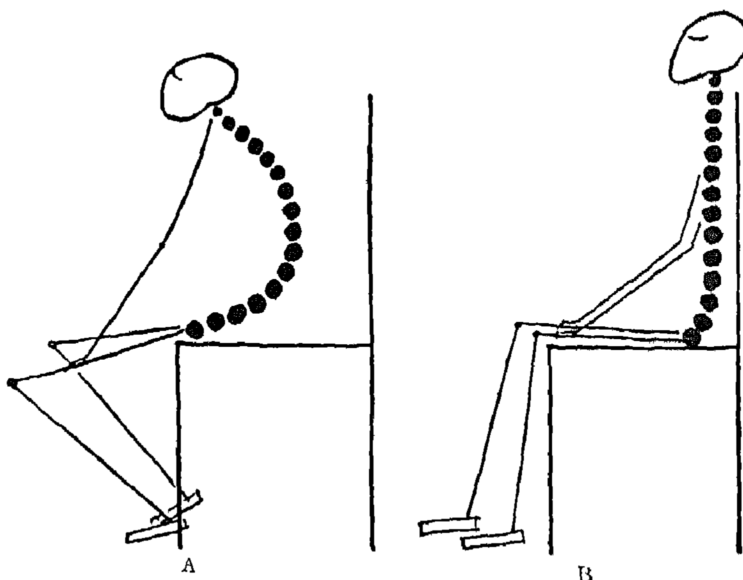


FIG. 26 DO YOU SIT LIKE A, OR LIKE B?

V. DIGESTION

INTRODUCTION

VARIOUS foodstuffs have nutritional properties far different from one another, but very few can be so completely used up that there is no residue. Though eating appeases the appetite, the body does not derive any actual benefit from the food eaten until it has been thoroughly digested, absorbed into the bloodstream and taken to the liver to be stored for future use, or to the working cells of the body to be burnt to provide energy. The food which requires least alteration is sugar, which can be quickly absorbed. It is often eaten when there is to be a sudden and great call for energy, as in racing.

Fresh foods are essential in the diet, especially to provide the elusive, but necessary substances, the vitamins, which are lost in cooking unless special methods are used. Many foods need to be cooked to make them palatable. The process frequently renders them more digestible, and in any case should make them more desirable This is an important point, because digestion actually proceeds much better when the meal is appetising, or is preceded by inviting odours, or by light savouries such as soup, as these start the flow of the digestive juices

The importance of adequate chewing of the food is twofold. In the first place, the food is mechanically broken into smaller pieces, which makes it more easily susceptible to the action of the digestive juices with which it comes into contact. It is the action of such a juice which makes chewing important from the second point of view. The saliva which is mixed with the food during mastication not only moistens and partly dissolves it, but contains the first of the digestive juices, which begins the change of starch into sugar.

When the food is sufficiently moist and broken it is swallowed, being shot across the windpipe in the throat by a special mechanism which prevents its entering the wrong passage When, by mischance, a crumb or other obstacle "goes down the wrong way," the passage from the lungs to the mouth is open to its widest and jerky gusts of air are sent up, constituting a cough, which blows the obstacle back to the mouth. (See Fig 28.) The swallowed food passes down to the stomach, which is placed just below the heart under the left ribs. Here more juices are poured on to it, and these will start the digestion of the protein, or fibrous part of the food.

In order that the food may be brought more closely into contact with the acid juice, the muscular wall of the stomach contracts and relaxes rhythmically, churning the food, breaking it up and moving it round. While this is going on, the only exit from the stomach remains closed, but when the food is sufficiently digested the exit opens long enough for a little of it (now very liquid) to be rushed through into the small intestine (It is this rushing exit from the stomach which causes the gurgling sounds sometimes heard after a meal.)

The amounts of food allowed out are fairly equal in quantity and in almost equal stages of digestion, but the last lot to be removed from the stomach may not be really ready to leave it. This throws slightly greater work on the intestine, which continues the work of digestion. When the meal is a fairly large one, the undigested fraction is relatively unimportant If, however, no fairly large meal is eaten, but the food is taken in numerous "snacks", the undigested portions passed on to the intestine are relatively greater, and do throw an appreciable amount of extra work on the intestine, leading, sometimes, to indigestion.

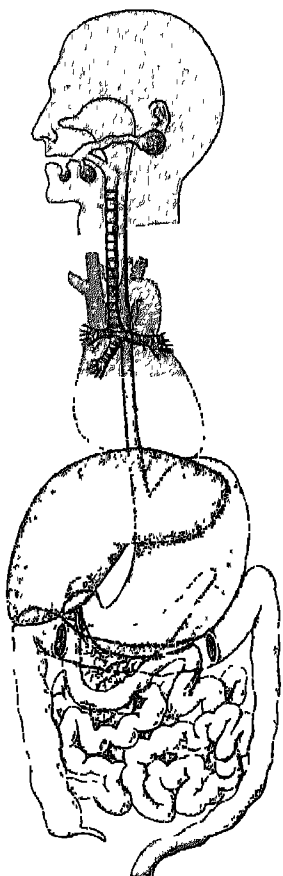


FIG 28. THE ALIMENTARY CANAL

When the food has been digested by the juices of the stomach and intestine, it is finely divided and relatively simple in composition It is now ready to be taken, in solution, into the blood itself for ultimate burning in the cells. To simplify this, and also to supply the juices, there is a large blood flow to the abdominal organs during and after a meal In order to allow sufficient blood to these parts, the supply must be largely cut off from the rest of the body. For this reason it is unwise to take a hot or cold bath, or active exercise after a meal, since these call for a good blood supply to the limbs and skin, and take it from the digestive organs, and this often leads to discomfort

However pure the food eaten, there is almost always a certain residue, even when everything of use to the body has been taken into the blood stream. Indeed, it is desirable that "roughage," such as certain fruit skins, should be included in the diet in order to make up a sufficient amount of residue. The reason for this is that the intestines do not work well on small quantities. Whenever residues are present in the small intestine there is a constant movement of the muscular covering pushing the contents onward. As these pass down the small intestine and into the large bowel almost all the water is slowly removed. The mass is moved onward until it reaches almost as far as the anus (the exit from the body), where there is a slight enlargement of the bowel, constituting the rectum. When the mass enters this it swells it out, and in doing so sends a message to the brain, leading to a desire to defaecate (remove the waste matter). If this desire is not answered it passes off and does not recur until there is a further pushing on of waste matter into the rectum. During this time the remaining moisture is being lost, and the masses slowly become harder to pass.

The most vigorous moving on of the solids occur when there has been a period of little movement, as during sleep. On arising, the whole body becomes active and more foods are passed into the stomach, causing an additional movement all down the alimentary canal. Hence the most natural time for defaecation is after breakfast.

Habit-forming is easier with regard to the digestive apparatus than almost any other function. One of the simplest habits, if formed early, is the answering the desire to defaecate, and it is one of the most persistent if once properly ingrained. On the other hand, consistent refusal because of a "rush" after breakfast is very effective in breaking the good habit. In order to prevent this state of things, breakfast should always be placed early enough to allow all persons freedom after it instead

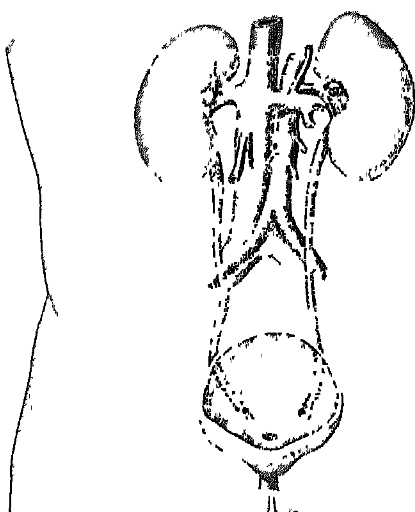


FIG. 29 THE KIDNEYS, URETERS AND BLADDER, WITH THE BLOOD VESSELS CONNECTED WITH THE KIDNEYS. THE BLADDER IS SHOWN CUT OPEN TO EXPOSE ITS INTERIOR

of starting work immediately; and in institutions the time-table should be so made out that none is bound down to a task at this time.

If the waste matters are occasionally kept in the body, little harm results. There are temporary signs, such as bad breath, but these end with the removal of the waste matters. If there is consistent constipation, waste products, which ought to be removed, accumulate in the blood, and are finally excreted on to the skin, causing pallor and poor complexion. The eyes lose their brightness and the effect on the nervous system is to cause an appearance of being listless and out of sorts.

The liquid which is taken in mixes with the solids in the alimentary canal, and is absorbed from the small intestine into the blood. The excess is removed with waste salts by the kidneys, which pass the liquid on to the bladder, where it is stored. Periodically the urine is removed from the body.

Distention of the bladder, even slight, leads to loss of concentration before it causes any discomfort. Those who have to stay in one place for some time should be careful to pass urine when opportunity offers and not wait for actual discomfort. The gain in concentration may in some cases be only slight but is worth while.

LESSON ON DIGESTION

For children of nine and over

The useful fire.—Suppose that when you get home to-day there is a bright fire in the kitchen grate and your mother says, "I want to keep that fire in until late to-night." How will it be best to do this? When the fire begins to get dull it will want another shovelful of coal on it. Small coal is better than lumps; but when you want to make the fire bright you will have to rake the ashes out from underneath so that the air can get to it.

Your mother uses the fire continually for doing all sorts of jobs, she boils the kettle, and heats her iron on it, and dries clothes in front of it.

Have you ever walked along a railway platform beside the train until you came to the engine? If you have done so, and if you have peeped inside the "cab" of the engine, you may have seen the fireman open a trap door and put a shovelful of coal on to the fire He does this in order to keep a hot furnace which will boil the water in the big boiler of the engine and make steam. As the steam escapes out of the engine, it pushes big pistons backwards and forwards and makes the wheels of the engine go round and draw the train along the rails. But if there were no fire, or if it were not stoked and kept burning brightly, the train could not move.

You see how important a fire may be. It warms, it cooks, it boils water, it is responsible for *Force* or *Power* that makes things move.

The fire in our bodies.—Our bodies are warm That is because there is going on

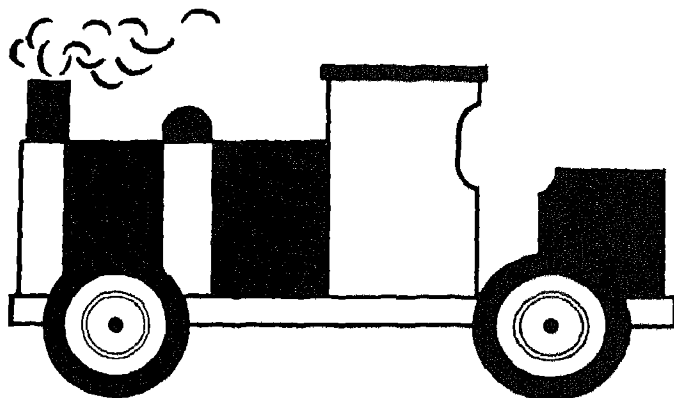


FIG. 30. BLACKBOARD SKETCH OF A TOY ENGINE.

inside us something that behaves much like fire, something that makes it possible for us to keep warm, and dry off the sweat from the skin, and move about. We have to stoke up this "fire," but instead of coal we have to stoke it with food and drink. We break the food up into small pieces in the mouth so that it will "burn" easily inside; then we swallow it, and think no more about it, for our body does the rest. Inside our body the food "burns away" much as the coal does, but, as it does so, it turns into liquid.

This liquid passes into a system of pipes (blood vessels) containing the blood and is carried to all parts of the body wherever it is needed This ever-flowing stream enables us to move; it warms us, and supplies food to all parts of the body. Of course some of the food we take is never turned to liquid, so it cannot get into the river, and it passes on through the body to collect in the lower end as waste, just as the ashes collect in the fireplace. The part where the waste collects in the body is called the *bowel.*

It is important that the bowel should be cleared out thoroughly at least once a day, (just as we clear the ashes from the fireplace) or else it will prevent the rest of our "body furnace" from glowing cheerfully. Indeed, if we neglect to clear the waste, the body will be choked up so badly that it will not be able to make use of the fuel or food we give it, and this may make us very uncomfortable and perhaps sick. The time for clearing out the fireplace is in the morning, before a fresh fire is lighted, and in the same way the best time for clearing out the bowel is in the morning before we begin to do the work of the day. (*Note.* Here is an opportunity for proper instruction in the use of the sanitary closet if the teacher finds it necessary. The teacher must use her discretion as to how much instruction she must give in detail.)

Fuel for the body.—Now to return to the "fuel" we use. There is good fuel and bad fuel. The best fuel is plain food without too much sweet stuff in it. Milk is an excellent food for everyone, and bread that is not too new (especially crusts), and green vegetables (cabbage), and fruit (neither over ripe nor unripe) are the best quality of fuel.

Do not keep stoking up all day long! It is a bad habit to be eating even sweets between meals. When you have had a meal give your inside time to make use of it before you eat any more, just as, if you want a good fire, you don't keep on adding coal before the fire has burnt up brightly.

Don't bolt your food That is the same as putting such a big lump of coal on the fire

that it does not light and puts the fire out. Eat slowly and chew well. This best prepares the food for the body to use, as well as giving the teeth good exercise. The lips should never be parted when you are chewing, as it is very unpleasant for other people to see what you are eating. Manners may be judged better at meal times than at any other part of the day. You should sit down to table properly and make sure that you have brushed your hair and washed your hands and face first, especially the hands, because if they are not clean you may find that you are eating dirt as well as food.

TEACHING NOTES.

1. Comparison with an engine.—Food is a source of energy, i.e., it serves as fuel Compare the body with an engine. If it is supplied with fuel (food) it can do work, i.e., it can make and use power.

2. Stoking.—In supplying the fuel (food) care must be taken—(*a*) not to supply it too often, nor in too large quantities, (*b*) to supply it in small pieces (mastication); (*c*) to supply the right kind of food (not too many sweets).

3. The waste.—In the burning of a fire, cinders and ashes are left behind as waste. In the consumption of food, some material is unused and must be evacuated, just as cinders must be cleared from a grate before relighting a fire. Regularity of this process is essential.

4. Manners when eating.—A certain code of manners is associated with the process of eating. The children should receive instruction in table manners, and they might co-operate with the teacher to produce a summary of the chief points to be observed at meal-times.

(*a*) Not to speak with the mouth full.
(*b*) To finish one mouthful before introducing the next.
(*c*) Not to make a noise in eating.
(*d*) Not to waste food. Clean plate. If offered too much, ask for some to be taken back before starting.
(*e*) Not to rise before others finish.
(*f*) To use the right implement, not eat off the knife, etc.
(*g*) To see that others have all they want before you begin yourself.

VI. TEETH

INTRODUCTION

IN the article on digestion it was mentioned that there were two reasons, each very important, for chewing all food very thoroughly. This can be properly brought about only when there is a full quota of good, workable teeth

A typical tooth consists of two parts, root and crown, different in structure and function. The root fixes the tooth so firmly in the jawbone and gum that it cannot be moved or dislodged by its work.

The crown of the tooth is shaped according to its function. The front teeth (four above and four below) are wide but thin, and have a fairly sharp edge. Because of their position these teeth would naturally be used for cutting and biting and their design emphasises this function. Next to these are four pointed teeth. In modern man these are of little specialised use, but they remain from

the time when all animals, including man, had to tear their food. Since these teeth are well developed in dogs, they have been named *canines*.

Behind these canines are larger teeth, with broad surfaces. These are called *molars* from the Latin name for a grinding mill, since it is they which break our food. The grinding surfaces of these teeth consist of a characteristic design of cusps and hollows. This irregularity of the surface assists in the grinding function of these teeth, but it also assists in sheltering crumbs of food and germs, so this surface is particularly susceptible to decay A child who has not been taught otherwise often cleans its teeth

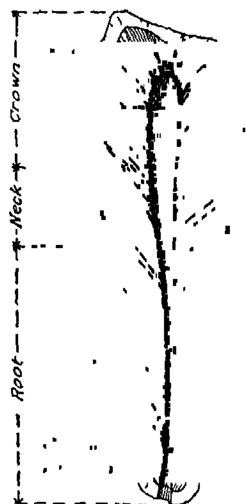


FIG 31. SECTION OF A TOOTH

with the jaws locked. In other words, it cleans the outer surfaces only. The importance of cleaning the grinding surface must be emphasised

The bulk of both root and crown is made up of a hard white substance called *dentine* This gives solidity and strength to the tooth, particularly if the dentine is well formed, but if the dietary in childhood has been deficient, tiny spaces form, which make the whole structure weak.

Covering the whole of the dentine of the crown there is a very thin layer of enamel, but there is no such protection for the root which is buried in the gum and should not need it. The edge of the gum and the edge of the enamel ought to coincide, so that there is no exposed dentine. If for any reason the gum shrinks, even slightly, there is a great possibility of decay. For this reason the line at the junction of the enamel and the gum has been called the "danger line," and certainly care should be taken that the teeth are brushed from the level of the gum toward the crown so that nothing remains which can attack this weak place.

Although they have the appearance of being solid, all teeth are really hollow, and in the cavity are various structures. The blood supply is maintained by tiny vessels which enter and leave by a tiny hole in the tip of the root. There is also a nerve which, inside the tooth, subdivides into numerous twigs which penetrate right through the dentine and end just beneath the enamel. These twigs ought to act as a protective mechanism. Whenever one is exposed and touched, it is stimulated and conveys an impression to the brain. So when the enamel has been removed in some way, though there may be no visible deficiency, there is a vivid pain when the part is touched, as with a toothbrush. This is a signal to have the hole filled before the decay penetrates farther.

If it does penetrate, there is a drainage of the decayed substances towards the pulp and into the root and gum, where they may accumulate as an abscess or may drain into the blood and lead to some lowering of the strength of the body.

To keep the teeth in the best working order they must be given the best of care. This starts at birth, or before. To have a lifetime of good teeth it is important that everything from the very foundation of the first teeth should be good. To obtain this the mother and the baby should have plenty of fresh foods, especially vegetables and milk, which provide the lime of which the teeth are made Besides this, butter,

eggs, and the other foods which contain the Vitamin D are necessary, since this vitamin helps to make all bony structures, such as the skeleton and the teeth, strong and of good shape. If there is not enough of this vitamin in the food there is a likelihood that the teeth will be damaged unless great care is always taken of them.

Many people think that because the milk teeth are transitory, their condition does not matter, but though all normal people have a second set of teeth, it is at least as important that care should be taken of the milk set as of the permanent one All the while the milk set is in use, the developing second set lies very close to the roots of the first. If the milk teeth are allowed to remain cramped the jawbone will not develop, and the permanent teeth are likely to be badly arranged.

Not only the position, but the condition of the second teeth depends upon the first. When decay attacks a tooth the products are carried to the root. In the case of a decaying milk tooth, they accumulate around the developing permanent tooth lying below. At this time the permanent tooth has not acquired its protective covering of enamel It is susceptible to attack from these decay products, which hamper its proper growth and weaken its structure, making the enamel thin and cracked, and the dentine soft and irregularly built.

Every care should be taken of the cleaning of the first set of teeth, but this is not enough. Even before there are any signs of decay, periodic visits should be paid to the dentist. It is possible that his skilled eye will detect hidden trouble. But if possible the first examination ought to be made when there is nothing wrong. This will give the child a good first impression. Few children fear the dentist because they have been badly hurt. The more potent reason is that there is a tradition that he will hurt. If the first visit is painless, and subsequent visits are always paid before any great harm has been done, there should be little dread of the dentist, and there will be more possibility that the teeth will be kept in good condition.

From the earliest appearance of teeth, all through life, it is important to have a good circulation through the jaws. Although blood does not actually penetrate into the dentine of a tooth, there are blood vessels present in the pulp which bring the essential oxygen and lime, and remove waste matters. The better the normal blood supply, the healthier the teeth are likely to be. Besides this, the teeth do not work at their best, and certainly do not look attractive unless they are well arranged on a jawbone which is large enough for them. To obtain this there must be a good blood supply to the bone, and the muscles attached to it must have plenty of work to do. The rule always holds good in the body that any part which is not used deteriorates. It is clear that a good way to obtain strong, healthy teeth and jaws is to give them plenty of work. Just eating and letting soft foods slip down the throat is not enough. There must be real work, like chewing crusts.

But whatever has been done to secure the health of the teeth from within, by ensuring good structure and blood supply, care must be taken of the exterior This consists of keeping them properly cleaned and properly cared for. Apart from accidents such, as a blow in the mouth from a hockey ball, tooth trouble arises from the activity of germs. The enamel which covers the crown of the tooth is one of the hardest things known. For this reason, when a hole has to be bored through unchipped enamel, the dentist has to use a drill of diamond dust, the hardest substance there is. There is only one other way in which enamel can be pierced. This is by the constant activity of germs, the softest of living organisms.

These are very active if they are given suitable conditions. Most bacteria, including those which attack the teeth, like warmth, moisture and air Besides this, they must have food They normally live on the particles of food which remain clinging to the teeth. Above all, they like to be undis-

turbed, so that they can carry on their activity unceasingly These conditions are maintained in an uncleaned mouth. The germs are able to flourish, pierce the enamel and penetrate the dentine We cannot, and would not wish to exclude warmth, moisture and air from the mouth; so the way to prevent bacterial action on the teeth is to allow no food to remain on which the germs can feed, and an even better way (since fresh supplies of germs and of food are always arriving), is to remove the bacteria before they can get in action. The important time for this scouring of the teeth is just before bed. After this, no foodstuff of any kind should be allowed in the mouth. If this is done, there will be few active bacteria, and no food to give them energy.

If the bacteria can only reach the dentine by first destroying the enamel, the decay caused will be obvious, and remedy can be sought. But if the enamel is weak, due to some earlier trouble, or if cracks are present, as they soon are after, say, breaking nuts, the germs do not make any attack on the enamel, but slip straight through and start on the dentine When this has happened, there may be quite a large decayed cavity in a tooth, yet no obvious opening This is a further reason for paying a visit to the dentist at fairly frequent intervals, since he can detect such hidden cavities.

LESSON ON TEETH

For children of nine years

The use of the teeth.—Suppose you are going to eat a piece of bread. Do you know what happens in your mouth before you swallow the mouthful of bread? You begin by biting a piece off with your sharp front teeth and then you use your flat-topped back teeth to grind the bread round and round. As you do so, six little sprinklers pour liquid (saliva) on to the food and it becomes soft Do you notice any difference in the taste? The bread begins to taste sweet after it has been well mixed with the saliva, and then is the time to swallow it. The sweetness is made by the saliva changing the food as it mixes with it. There is starch in the flour of which bread is made. It only needs a very simple treatment to change starch into sugar. The saliva in the mouth has the power of making this change. If you put a tiny piece of starch in your mouth and let the saliva soak into it, it will soon begin to taste sweet as the saliva turns the starch into sugar. This is one of the ways in which food is changed inside our bodies so that we can use it to make us grow and to give us strength.

(Let each child have a small piece of bread to chew. As they eat it, recapitulate the points already noted.)

Have you swallowed every bit of the piece of bread you put into your mouth? I expect each one of you has, hidden away in some corner between your teeth, a small crumb. What will happen if you leave it there until to-morrow?

In your mouth there are hundreds of tiny growing things called "germs," so small you can neither see them nor feel them. (Do you remember how the skin prevented these from getting inside us?) The germs get into the mouth each time we open it, but they are chiefly harmless so long as they are not allowed to settle there for long. If they find that sweet little crumb in your mouth they will settle down in it and begin to make a substance called *acid*. Now this acid has the power of dissolving very hard substances, and as soon as it comes in contact with our teeth it begins to dissolve them and make little holes or pockets in them. So the acid in that bread crumb of yours is beginning to soften the outside hard substance on your tooth. The hard substance on your tooth is *enamel*, and when once that is broken through there is a much softer substance inside. This makes a good place for the germs to creep into.

Most people have two sets of teeth in their lives. The first set comes when they are babies. Have you got a baby at your house,



OLIVER RUST ..

OH-THIS IS THE STORY OF OLIVER RUST,
WHOSE NURSE AND WHOSE MOTHER,
DAD, SISTER OR BROTHER
COULD NEVER PERSUADE HIM,
HOWEVER THEY BADE HIM,
THAT TO MAKE HIS TEETH STRONGER
IT WAS 'WRONGER' AND 'WRONGER'
TO EAT ONLY CRUMB AND LEAVE ALL THE CRUST!

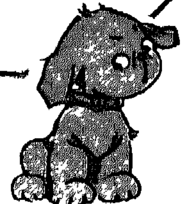
HE NEVER DESISTED
BUT ALWAYS PERSISTED
IN GIVING HIS TEETH JUST NOTHING TO DO;
NOTHING TO BITE AT AND NOTHING TO CHEW.
SUCH A TERRIBLE THING! FOR NOW PEOPLE SAY
HIS TEETH ARE BEGINNING TO CRUMBLE AWAY!
AND IF IT GOES ON ANY LONGER-MAYHAP
HE'LL SPEND ALL THE REST OF HIS DAYS
EATING
PAP!

MABEL
LUCIE
ATTWELL









CAUTIONARY TALES No. 3

ISSUED BY THE DENTAL BOARD OF THE UNITED KINGDOM, 44 HALLAM STREET, LONDON W 1.

[Reproduced by courtesy of the Dental Board of the United Kingdom

FIG 32 OLIVER RUST

and how many teeth has it? Did they all come together or two at a time? These baby teeth are called *First Teeth* or *Milk Teeth.* There are twenty of them, ten at the top and ten at the bottom In both the upper and lower rows there are four in the front and three at each side. These teeth are not very firmly fixed in and soon come out, so that at the age of five or six we begin to lose our milk teeth. All the time the first teeth are getting loose, the second teeth are inside the gums and pushing up to show themselves. The milk teeth fall out to make room for the real teeth that are coming through the gums.

How many teeth have you got now? Count them Have you got twenty-eight? There are four more called wisdom teeth that come right at the back when you are much older.

What a tooth is made of.—Suppose we find out what a tooth is made of? To begin with, there is a good deal more than you can see. There is a long piece called the root (sometimes a tooth has two or even three roots), which goes deep into the gum and fits into a space in the jawbones, so that teeth are, to begin with at least, firmly fixed in Each tooth has a core in the middle made of soft material called *pulp.* This is the part of the tooth which must be well protected. If anything harmful got into this pulp it would give you very bad toothache. To protect this pulp, it is covered by the hard tooth, which has an extra hard coat on the outside called *enamel.* The tooth itself is fairly hard but the enamel coat is hardest of all.

Supposing there are little germs in your mouth feeding on the bits of food you have forgotten to brush out of your teeth. These little germs will be making acid as fast as they can. The acid will be dissolving the enamel and the germs will get inside the tooth, and at last, unless they are stopped in time, the germs will work right through the tooth and reach the pulp and *then you will have toothache*

When once you have got a hollow tooth the germs live in it, and creep out to attack other teeth, and unless you go and see a dentist you may have all your teeth destroyed, and all because you left a little piece of bread between your teeth! If you wait until you have toothache before you take care of your teeth you may wait too long. The pain does not come at first and we never know what is going on in our teeth until a great deal of damage has been done. How can we prevent all this pain and trouble?

(1) Never let the germs remain on our teeth for long. Clear every particle of crumb or anything sticky from the teeth with a toothbrush twice a day. Be particularly careful not to leave anything sweet on them for long. The most important cleaning time is last thing before going to bed, and remember particularly the narrow crevices between the teeth.

(2) Be careful not to crack or chip the enamel off your teeth by cracking nuts with them, or picking them with a pin. A very tiny crack will at once be occupied by germs.

(3) The only person who can tell you when germs have first found a hiding place in your teeth is a dentist. He has a wonderful eye for the tiny holes they make, and if you see him often enough he will remove the germs from any holes there may be and block them up so that the damage will not go any farther.

It is a good thing to see the dentist every six months if you can.

How to clean the teeth.—One very important thing to remember about the teeth is that *clean teeth do not decay.* How then should we clean our teeth? Use a small, stiff brush, but not stiff enough to make the gums bleed. Use it vigorously on every part of every tooth—five parts of every tooth, front, back, two sides, and top. To clean the spaces between the teeth you must brush downwards when cleaning the top teeth and upwards when

cleaning the lower teeth. Remember to brush the inside of the rows of teeth too. Powder or paste may be used, but the brushing is the most important part. Rinse the brush thoroughly after using it, and stand it or hang it somewhere to dry.

How to care for the teeth.—Teeth need exercise, and although care must be taken not to chip the enamel with hard nuts or boiled sweets, yet it is an excellent thing to bite hard crusts and use the jaws well. Apples are good to eat because they exercise the jaw and also clean the teeth. If we eat nothing but soft food the jaw will not grow well, and there will be so little room for our teeth that they may overlap one another and be very ugly.

Lastly, do not form the bad habit of putting all sorts of things into your mouth. Do not chew your pencil and do not suck your thumbs, fingers, or anything which has been in the mouth of anybody else.

Except for speaking, singing, eating or cleaning your teeth, keep your mouth *closed.*

VII. THE HAIR

INTRODUCTION

THE description of the hair which was given in the article on the skin, is sufficient to give an understanding of its physiology and hygiene. It will be remembered that a hair is a long fibre made of many cells, with a bulbous root embedded in the skin. Halfway down the buried part are oil glands which pour liquid on to the fibre.

Hair seems to be dead, and not to need nourishment, but it is really made of living, growing cells which must be constantly fed The cells of the root can get all the food they need from the blood near by, but the end of even a tiny hair is too far away to derive any direct good from the circulation. Yet they must be nourished, or they will dry up. Special provision has been made to feed the cells of a hair from outside by means of oil from the glands at its root. This oil runs down the length of the hair, and also on the surface of the skin. The hair cells take all the food they need to retain their strength and the remainder forms a film which protects and softens the skin. This layer of oil is being constantly washed off, so, although the hairs themselves require very little, the glands must form a great deal of oil to make up for what is taken away.

The longer hairs, like those of the head are more difficult to care for. They are thick and strong, and most of the cells are too far away from the blood, so these are nourished from outside by the big oil glands which occur all over the scalp. These glands pour quantities of liquid on to the hair roots, which are always well nourished, but it is more difficult to get the oil down the length of the hairs. In fact, the only way it can be spread in an even, nourishing film is by constant brushing. This leaves a fine film which brings out the varied shades of colour which are present in all hair, and give it a gloss. What is more important is that, if the brushes are clean, as they naturally ought to be, they take up all the superfluous oil which would otherwise collect on the scalp.

Another advantage is that the friction of the brushing, and the tossing of the hair make more blood flow through the skin of the hair, so that the roots get much better looked after, and the flakes of dead skin,

which appear as dandruff, are inconspicuously removed as soon as they are formed. Another pleasant way to get this result is to let the hair blow loose in the wind for a time.

Oil is an excellent dust trap, so with such quantities always flowing on to it, there is sure to be plenty of dust on the hair. Frequent washing is necessary to take away this dust, and keep a pleasant appearance.

In some cases the washing has a special effect of getting rid of any insects which may be present These are not only indications of an unhealthy environment, but are really bad for the health of the child, since they destroy its comfort. The mere irritation of movement among the hair is sufficient to cause a constant lowering of attention during the day, and at night leads to loss of sleep, and so to lowered resistance to disease

When the irritation is constant, the skin of the head becomes inflamed, and poisonous substances are formed. To prevent such poisons being carried round the body, there is a special arrangement of glands, which act as scavengers. One group lies in the armpit, and these become swollen and sore if the arm is poisoned, or if it is vaccinated. Similar glands are found in the neck, and these take away the poisons caused by the irritation of the scalp They can become so overworked that they fail to fulfil their functions completely and so the body becomes more liable to disease. In the struggle to take up all the poisons, the glands swell, and the child is quite incapable of attending school, and often endures great discomfort and pain.

Quite apart from the unpleasantness of the idea that children have "foreign bodies" in the hair, their concentration, level of health and of resistance can never be high when they are in this state. One of the easiest ways to get children to take care of their hair is to encourage the aesthetic appreciation of it, but without inviting exaggerated waving and crimping.

LESSON ON HAIR

For children of nine and over

How many of you keep a cat at home? What colour is it? Is it in good condition? Now the best way to judge this is by its coat. Is its coat shiny, and does it feel soft when you stroke it? Perhaps it is moulting. Every cat has to change its coat some time or other. As a matter of fact, just like us, it has a summer coat and a winter coat, but at all times of the year a cat ought to look sleek and glossy, and if it is healthy it will always look nice. This is because the cat is always washing itself. It licks itself all over more than once a day and takes particular care to wash behind its ears.

The cat's tongue is covered with thousands of little bristles and as it licks itself it is really brushing its hair very thoroughly. If the kitten licks your finger you can feel how rough it is; that is because all the little bristles are scraping over your skin. How many of you keep a dog? What sort is he? Has he got long hair or short? Does his coat look sleek? Do you see your dog licking his

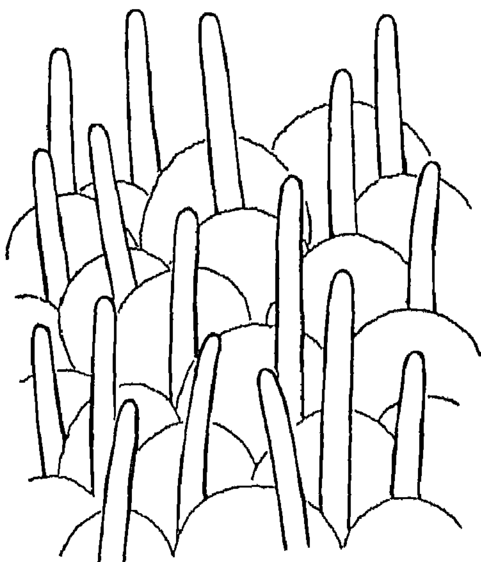


FIG. 33 MAGNIFIED SURFACE OF A CAT'S TONGUE

coat over every day as a cat does? Sometimes he licks his paws, but he doesn't look after his coat as a cat does, and if you want your dog to be comfortable and look nice you must comb and brush his coat for him, but be careful not to pull the comb roughly or you will hurt him and he may snap. When he is brushed thoroughly you will find that his coat shines.

What makes the coat shine? It is the oil from the little bags of oil in the skin which spreads along the hair and keeps it oiled and supple so that it doesn't break easily. When you brush your dog you brush more oil on to the hair and the dog usually feels very pleased. You have not only improved his looks, of which he is not aware, but you have made him feel very much more comfortable, and that he appreciates very much.

Although we have tiny fine hairs nearly all over us (hold up your hands and see the little golden hairs on the back) most of our hair is on our heads. It protects us from too strong sunshine and also (if it is well cared for) it looks very nice.

It is a part of us that shows, and it is a great pleasure to look at a girl or boy with a well brushed, shiny head of hair. The more you brush it the shinier it becomes. Some people do not know that there are oil bags in the skin and instead of brushing to get the oil out of the bags they prefer to pour oil on to the hair from a bottle! This usually makes the hair look greasy instead of just shiny, and no oil is so good for the hair as that which comes from our own oil bags underneath the skin. So it is a good habit to count how many "brushes" you give to your hair every night and every morning. Some people only have to give twenty good brushes to each side of the head to make the shine appear, but there are people who give a hundred and fifty brushes to their hair every day. The brushing helps to keep the hair clean, spreads the oil along it, and makes it grow thick and long. When you brush your hair take it away from your face, for the hair oil is not good for your forehead and may make it spotty. When you do your hair make sure that none of it hangs over your eyes, for it is bad for the eyes to have wisps of hair dangling over them.

Of course girls with long hair should always tie or plait it back while they are at work or play. Long hair which is not tied back picks up dust very easily and also gets in the way when you are playing or bending over books or sewing, and it makes your neck very hot.

Combs and brushes should always be kept clean. After using a brush always pass the comb through it to remove any pieces of hair which may have got caught in it. Then take the hair from the comb and throw the hair away. Brushes and combs require washing at least once a week. The comb must be scrubbed to make sure that the dirt is removed from between the teeth. If this is not done, every time you use a dirty brush or comb you may be putting more dust on to the hair than you take out.

Never use brushes and combs belonging to other people or else you will brush their dust and oil into your hair. For the same reason you should never wear other people's caps or hats.

Hair has to be washed frequently to get rid of dust, but washing takes away not only the dirt and dust but the oil, too; and therefore after your hair has been washed you must brush it very carefully to bring back the oil on to it from the skin below.

Nowadays so many people have short hair that it is not difficult to keep it clean and glossy. The skin of the head sweats just like the rest of the body, so that in addition to oil which is good for the hair, it sometimes gets soaked with sweat. If you keep your hat or cap on too long, the sweat does not get away, so only wear your hat when it is raining, or when it is cold, or when it is very sunny Let the wind blow through your hair, because, like the rest of the skin, your head wants fresh air.

(Two or three children might be asked to bring their brushes and combs, and demonstrate hair brushing before the others.

Their shiny hair may then be compared with the unbrushed heads.)

If you neglect to brush or wash your hair, the dust and dirt will collect in it; the sweat will remain in the hair; the openings of the oil tubes will be choked; the skin will dry up and come off in flakes, the hair will not keep supple and will break and give the whole head a very uncared-for appearance.

Such a condition is bad, but if neglect is still continued worse may follow. With the dust and dirt in the hair there may be found sometimes very small insects If the hair is combed and washed frequently there is not much danger of these insects being found in the hair, but when the hair is neglected and seldom washed these insects, called *head lice*, may be found in large numbers. These little creatures lay eggs (called *nits*) and stick them on to the hairs. Soon these eggs hatch out into insects. These in turn lay eggs and so it goes on and the insects get more and more numerous. They irritate the skin of the head as they crawl about and make the head tickle. The insects are so small that they may slip between the teeth of an ordinary comb, but there are other combs made with very fine teeth (teacher can demonstrate the two sorts of combs), and these are so close that the insects can be combed out of the hair. So, if you find that your head is tickling, you must go and ask your mother to comb it for you. Unfortunately, the eggs are too firmly stuck to the hairs, to be combed out, and the hair will have to be washed with something special to get rid of them To have lice in your hair is so uncomfortable that you must take care to comb and brush your hair regularly and you must be very careful not to wear other people's hats or caps.

Hair sometimes tends to grow irregularly, and nothing looks less pleasing than a head of hair whose strands are all of different lengths.

Boys' hair needs to be kept short, and whether girls wear their hair long or short it ought to be kept trimmed so that the ends are in an even line. If you have straight hair do not try to curl it with curling tongs. The use of hot metal dries up the oil and makes the hair brittle, so that it breaks off and leaves untidy ends.

TEACHING NOTES

1. Hair needs constant supplies of oil from the oil sacs below the skin.

The flow of oil can be encouraged by constant brushing and combing.

2. Dust and dirt blowing into the hair must be removed by periodic washing.

3. It is just as important to wash brushes and combs regularly.

4. Hair should be dressed in such a way as to keep it from hanging over the eyes, and long hair should be tied back or plaited.

5. The penalties of neglect are:—

(*a*) Hair without lustre.
(*b*) Irregularity of growth.
(*c*) Discomfort of the scalp.

6. The risk of contamination of the hair by vermin should be indicated (but not over emphasised) and the children taught that though they may occasionally be unfortunate enough to be infected, common sense and careful treatment will soon get rid of the trouble.

7. It should be remembered that in all lessons to young children practical demonstrations are the most effective means of fixing facts. A demonstration by one child brushing her hair before the class will be found more effective than much talk on the matter. Next to practical demonstrations, which are not always feasible, blackboard sketches are the most valuable. An uninterested class will immediately become alert when the teacher begins to sketch on the blackboard, no matter how slight or imperfect the drawing may be.

VIII. NAILS

THE LESSON

For children of nine years and over

DURING our talks we have spoken several times of those tiresome little enemies of ours--"germs".

It is rather a pity they are too small to see, for if we saw them we should be much more careful about getting rid of them. We do know a great deal about them though, and we can be quite sure that wherever there is dirt there are germs. That is why we know that "Where there's dirt, there's danger."

Germs thrive on dirt, and they thrive in dark corners, especially if it is warm there. Therefore it is particularly important to get the dust and dirt away from all the crevices in our skin (nose, ears, armpits) when we wash. There are some narrow places where dirt and germs are always collecting, and some of these are under our nails. Of course we must frequently scrub these out. Some people scrape the under surface of the nail with a knife or pointed pair of scissors, but this is a great mistake. Nails are naturally smooth and shiny on both sides, and if we scrape them we make a rough place. This helps the dirt to cling on to it more easily. If the dirt won't come out with soaking and scrubbing, a hairpin or orange stick (something blunt) may be used to help, but be careful not to pull the nail up away from the bed on which it is lying or else you will make a bigger space for dirt to get into.

Everything about a nail should be smooth. Its edge should be cut smoothly, just level with the tip of the finger, and rounded to fit it. It is easiest to make this smooth by using a nail file.

What sort of nails has a dog got? What does he do with them? He uses his nails to scratch himself with. What sort of nails has a cat? It has long sharp curved claws which it uses as a weapon of offence, and to help it to climb trees. So have all animals like lions and tigers which belong to the cat tribe. What sort of nails has a rabbit? Sharp pointed claws, and it uses them to dig burrows to live in. What sort of nails has a horse? He has only one nail and that is a hoof because he has only got one toe left on each foot, so he can't climb trees, or dig in the ground, or tie knots in little bits of string!

(N.B. The teacher can enlarge this theme at will, using illustrations tending to show that the nails of the human hand are possibly remnants of something that was formerly an important weapon or tool for man's use and which had deteriorated and become less important with disuse.)

It is probable that in very early days, before man was properly civilised, he had long, sharp nails like claws that helped him to dig and climb, and if need be to fight. Nowadays, when so much work that used to be done by hand can be done by machinery, our hands do not require such long and strong nails; and indeed if we allow our nails to grow too long they get in the way We are liable to break them by catching things in them, and we find that our hands are less useful if our nails are too long So keep your nails just a little shorter than the tips of your fingers. If you cut your nails too short—and worse still if you bite them—you will find that the tips of the fingers are sore and you won't be able to use your fingers as comfortably as before. You won't be able to pick things up properly and will be in danger of being clumsy with your fingers.

If you look at the base of the nail you will see, or ought to see, a little half moon of a lighter colour. This is in danger of being covered by the fold of skin that protects the

base of the nail. When you dry your hands you should always push down the fold of skin with the towel until the half moon shows clearly. The nail grows from the bottom edge, and the whole nail is pushed up over what is called the *Nail Bed*, towards the tip of the finger. The top edge only should be free from the nail bed. When you bite your nails you pull away too much of the nail from the bed and you tear the nail downwards and make its surface ridged and unsightly. Never pull away little bits of skin from round the nail. If you push back the fold of skin carefully when it is soft it will not crack and leave little rough edges. If you pull bits of skin round the nail you leave little holes in the skin through which the germs may enter. If they get under the nail it is difficult to get at them and they may be very harmful and sometimes cause painful *Whitlows* Well-kept nails are as important a part of your cleanliness as teeth and hair and skin. *But* how many nails have you? *Twenty*!

The girl or boy who really cares about being clean will not pay attention to finger nails only. Toe nails require looking after, too, though unless we have bare feet they don't get dirty as readily as do finger nails They must be cut periodically. If you let them grow too long they will make your feet too long for your shoes, then either you must curl your toes downwards to keep them from being uncomfortable in your shoes (and this will give you cramp when walking), or the nails themselves will get turned downwards and driven deep into the sockets in your toes. This may lead to all kinds of foot troubles. Long toe nails also wear holes through stockings.

Suppose you sprained your ankle on the way home to-day and you were taken into a hospital to have it bandaged. Your shoes and stockings would have to come off. Would you be quite pleased with the appearance of your toes?

(Nail inspection, either hands or toes, might be introduced here.)

SKETCHES FOR THE BLACKBOARD

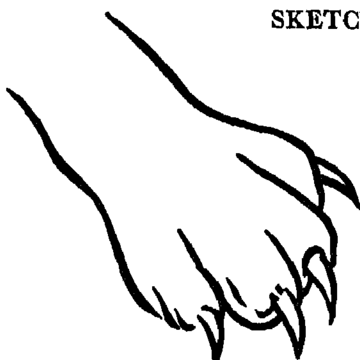


Fig 34. Nails of Cat



Fig. 35 Nails of Dog

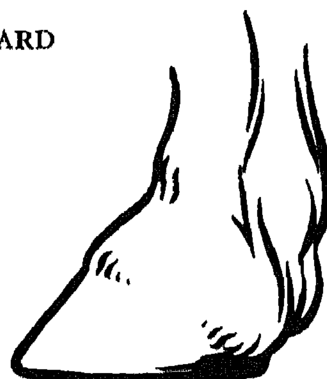


Fig. 36 Nail of Horse

TEACHING NOTES

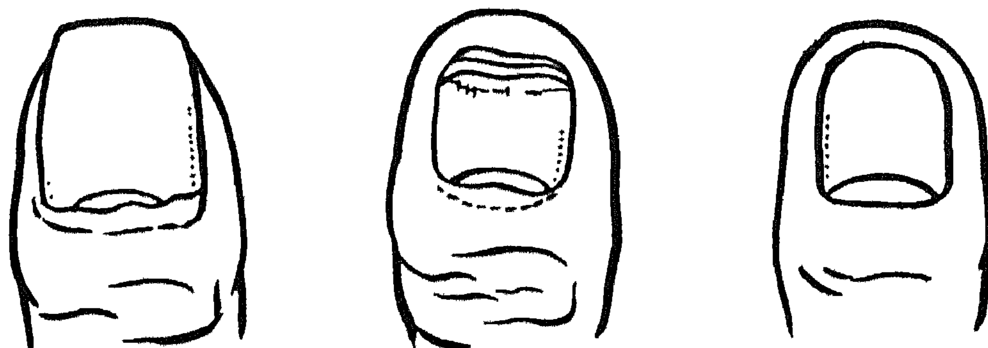
1. Nails should be:—

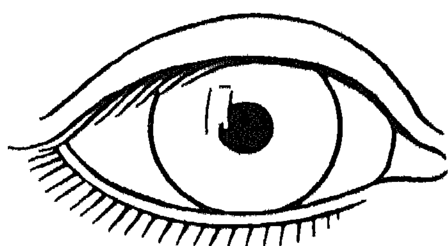
(*a*) Clean.
(*b*) Trimmed nearly level with the finger tips
(*c*) They should have the skin pressed back at the base to show the crescents

2. Nails should never be:—

(*a*) Bitten.
(*b*) Scraped underneath with sharp metal.
(*c*) Pulled up from their beds in cleaning.

3. Children should be warned about the danger of germs entering through sores caused by pulling off little pieces of hard skin from the edge of the nails









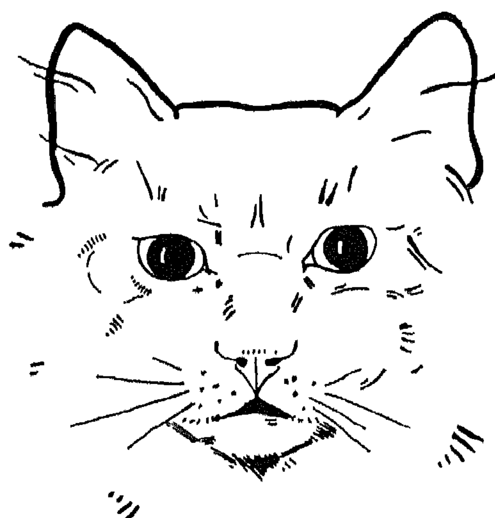


Fig 37

Finger Nails.—Are Your Nails Too Long, Bitten Short, or Properly Cut?
Human Eye   Human Ear
Cat's Eyes—By Day and at Night

IX. THE SENSES AND SLEEP

INTRODUCTION

ALL sensation is received at or near the surface of the body, and the impression immediately conveyed to the brain, where the feeling is really experienced, though it appears to be in the skin, eye, etc., as the case may be.

The paths for sensation are not capable of conveying, indiscriminately, any kind of feeling, but each is specialised in some way, according to its place in the body. For instance, certain nerve threads, or fibres, grow from the brain, down the spinal cord and out to the skin. Here they come into contact with cells of a special shape which grow underneath the dead layer. (See diagram in lesson on skin, page 6.) Whenever the skin near by is touched these cells are affected, and pass a message through the nerve fibre to the brain, which only then realises that the skin has been touched.

Unless there is a touch near it, the receptive cell remains quite inactive. The skin may be warmed, or a strong light thrown on to it, and it does not alter, but as soon as the skin is touched, it sends its message.

These receptive cells are very tiny, too small to be seen, and they are only able to receive stimuli accurately over a very small area of skin. Wherever, on the body, these cells are sparsely scattered, the accuracy of feeling is slight. But when the cells are thickly spread they record all touches very clearly

It is interesting to test examples of this. A pair of dividers should be used (or any two points which can be held a fixed distance apart). The test should be made on a chosen area of skin on a blindfold subject. The skin should be touched with either one or both points of the dividers, simultaneously, the subject saying whether he could feel one or two It will be found that there is a certain minimum distance below which the subject cannot tell that there are two touches and not one. If different areas are tested, different results are obtained, according to the frequency of occurrence of the special "nerve endings." The back of the neck and the palm of the hand or the finger tips should be compared in this respect. Wherever accuracy of touch is wanted, the nerve endings are closely packed. Elsewhere they are infrequent, but the endings are found over the whole of the body.

The endings specialised for the other senses are collected into small areas where they are highly active. Those for smell, for instance, are collected in a small region in the top of the nose and those for taste on the surface of the tongue.

These two senses are closely related to each other and both depend on the chemical activity of a substance reaching the sensitive area. In both cases the special nerve endings come right on to the surface. Their receptors are cells which have tiny hairs growing out on to the surface of the nose or mouth. Whenever a special chemical, such as the infinitesimal air-borne particles which constitute an odour, touch a hair, a stimulus is passed up to the brain, which recognises the cause. The special nerve endings of smell are arranged in the uppermost part of the nose, so that unless respiration takes place properly, no active (i.e., giving a sense of smell) substances reach the sensitive spot. Similarly, the power of smelling is lost when the nose is blocked by a cold.

Taste is not a pure sense, as the others are, as it is complicated by the sense of smell. There are not many things which can be actually tasted, and these fall into a few classes. Acids, sour things, and sweet things are the main flavours, anything more delicate is sensed by particles rising from the throat to the top of the nose, and there

stimulating the smell nerve endings. It is often noticeable that nothing has much flavour when the nose is blocked by a cold. Hence the unpleasant taste of some medicines may be modified by blocking the nose while the draught is swallowed. In this way the sense of smell, at any rate, is put out of action.

The senses of sight and hearing are served by organs which have no other function, but are specially developed to receive these stimuli.

The eye.—The only part of the eye which really must be exposed is the coloured part in front, but there must be a large sensitive area at the back to receive all the impressions that come in from the outer world. In many animals the apparent size of the eye is deceptive, but in all cases the part of the eye hidden in the socket is much larger than the part exposed. In this way there is much greater protection. No part actually protrudes into possible danger, and in any case, the exposed part has the eyelid for partial protection. The motion of closing the eyes if they are threatened in any way is instinctive in all animals. Not only do the eyelids protect the eye, but the lashes brush away dust, which might be harmful.

The thin layer which lines part of the eyelid separates from it at the level of the socket. It joins and covers the whole of the front surface of the eye, so that dust which gets into the eye can only get to the side, and is prevented from getting right round by this curtain.

The bony socket in which the eye is sunk protects it from all but the most violent blows, and the packing of fat which separates the surface of the eyeball from the bone prevents harm by jolting when the head is moved suddenly.

The outermost layer of the eye, the "white," is made up of very tough material so that it cannot be broken easily. In front it becomes even stronger, but a circle of it, the cornea, is transparent and allows light to go through from the outside to the inside of the eye. Although the coat is white in colour it is so thick that it prevents light from entering, and so makes the inside of the eye into a kind of dark room. It resembles the camera, for no light is allowed to enter except through the special hole in front.

It is to this tough white substance that the six muscles are attached which alter the position of the eyes. These muscles are capable of being overstretched just like any others. Constant tension on the six "extrinsic" muscles, such as is caused by looking always at near objects, and so having to cross the eyes, or always being worried by a dangling lock of hair, can produce such a strain, which becomes permanent, and involve a crossed eye.

Inside the white covering is a dark, thin layer. Its colour keeps the inside light-proof, and gives the pupil its black appearance The coloured layer separates from the white layer in front, forming a vertical coloured curtain, the iris, with a hole in the centre, the pupil, which lies behind the transparent cornea. This is a special arrangement by which all light can enter the eye itself, but only a certain amount is allowed to get past the iris to the back.

The black layer is largely composed of blood vessels, and it is as important as any layer, for the eyes cannot work without a constant supply of blood, bringing oxygen. Some people, when they get up suddenly, find that the world is blacked out for a minute. With the sudden movement, the blood supply to the eyes was temporarily stopped, so the nerves could no longer work properly. After a minute the blood flow is resumed, and the eyes become normal.

The innermost layer is very delicate, and thin, but it is all-important. It is called the retina, and is composed entirely of the special nerve-endings which are sensitive to light rays, and the nerves which carry the impulse out of the eye and to the brain. At the place where all the nerve fibres gather together and leave the eye there are no nerve endings, so the eye in that place is blind. Normally we are so used to this

that we make allowances for it, and can hardly realise that there is a blind spot in the eye, but the phenomenon is frequently utilised among optical illusions.

The camera and the eye work in exactly the same way, and the one may be studied by means of the other. Any camera user who has ever taken one exposure, then another with the film only half moved on, or who has seen the image on a ground glass plate, will realise that the picture is formed upside down. Similarly, rays from objects which are high up in front of us impress the lower part of the retina; those on our left reach the right side of the retina, and so on. The images formed are turned the right way up by the brain

Just as the camera has to have a lens in order that a large area of the outer world may all be represented on the small area of film, so there has to be a lens in the eye to make a similar image on the even smaller area of the retina. Various things work together to cause this magnification.

There is an actual lens just behind the iris, and the action of this is helped by the curvature of the cornea. If this curvature is not even all over but is greater in some parts than others, the image which is formed on the retina is distorted, and some things cannot be seen clearly. This condition is called "astigmatism," and is rectified by the use of glasses which allow for the incorrect curvature

Although some cameras (box Brownies, for instance), do not need to have the size of the aperture changed, whatever the distance, the larger and more accurate cameras must be specially focused for objects at each new distance. This has to be done in order to obtain a sharp picture. The eye works like a very accurate camera.

The need for such a change is shown by closing one eye and looking at a pin point six inches away. Without altering the eye in position or focusing, concentrate on the background, yards behind. (This should be the same brightness as the foreground.) The background is quite indistinct Similarly the pin becomes indistinct if the eye accommodates for distance. If possible, watch someone perform this experiment, and it will be seen that the pupil of the eye becomes small when looking at near things, and larger when the eye accommodates for distance. Normally there has to be a continuous adjustment of the size of the pupil as our gaze wanders from one object to another.

The iris, being small compared with the distance across the eye, cannot make sufficient change in magnification. It has to be helped by the lens, which, unlike that of a camera, is almost liquid, and can change its shape when necessary. By the action of some very tiny muscles inside the eye, it can become thick, and magnify more, or thin, and magnify less. So not only are constant muscular changes going on in the iris, but also round the lens, as we look at objects at different distances. If the changes take place too rapidly, more so than in ordinary life, the eyes feel tired because of the strain on the muscles inside.

Of more common occurrence is the strain of holding the eyes in a constant, unnatural position. When the eyes are at rest, they accommodate for distance. To hold the lens in a shape accommodated for near objects requires constant effort of the muscles, which is even greater strain than the normal graduation from near to far vision. This is the reason for the greater occurrence of eye strain among people who have to do close work than those who may keep normal variation of accommodation.

Although adults strain their eyes by doing close work, the danger is far greater with children. Their eyes are not yet fully developed, and at this stage they are naturally long-sighted, so the strain of close work is greater.

In spite of this, children generally hold their work close up. This is partly because the muscular portion of the body as a whole is more comfortable if the work is near the eyes, and partly because the retinae are unused to fine lines, and need to have them magnified as much as possible. Because of

this it is desirable, where possible, to give children reading desks which hold the books in a convenient position, and to let them do as little close work as possible. Wall boards and chalk should be utilised instead of paper and pencil.

The iris has a second function to perform. It has been shown how it helps in focusing. Besides this, it cuts off the extra light which might harm the eye. Strong light is able to burn the retina and leave a permanent scar. (Every solar eclipse leaves a permanent image on several eyes because their owners did not use smoked glass.) Whenever a bright light is thrown directly on the eye, or on to the object looked at, the pupil closes down to cut off as much light as possible, and save the retina. When there is very little light the pupil opens to catch all rays. Just as sudden changes of distance accommodation are tiring, so are changes of accommodation to light, such as are met with in cinemas.

The ear.—The important part of the ear, the part which contains the special nerve endings of hearing, is placed inside the bone of the skull, where it is especially protected from jolts.

The outer part of the ear serves to collect the sounds and direct them to one place. In this way it reverses the function of the old-fashioned loud speaker, which distributed the sound from a loud source. The sounds, which are ripples of different wave-lengths in the ether (similar to wireless waves, but of different sizes), are directed down the channel from the outer ear towards the inside of the head They pass fairly well, even if the ear is partly blocked up, but are much clearer if the passage is open. The waves are caught by a tight membrane fixed right across the passage. This is able to vibrate in unison with all normal sound waves, and as the part responsible for each given note moves, it pulls on the appropriate nerve endings and the stimulus passes up the nerve to the brain, which recognises what has happened.

The vibration of the drum is of no use unless the nerves will respond. Nor is it of any use to have excellent nerve endings and fibres if the drum is not working. The nerves in the ear seldom get out of order, but the drum may easily do so. There may be an over collection of wax in the outer ear passage, which presses on the drum and damps all vibrations. This can be remedied by medical attention.

If the drum is ruptured, the harm is irrevocable. It is sometimes torn by people who attempt to remove the wax with sharp instruments, and push them too far. It can also be broken, or strained by sudden impact, however it is produced. The two commonest causes are a blow on the ear, and a sudden, very loud sound.

THE LESSON

For children of nine to eleven years

A. The Senses.—Do you know what a "sensible" person is? He is a person who does the right thing at the right time and in the right place. How does he know when and how to do things? Partly because he is intelligent and uses his brains, and partly because he has five powers inside him that help him. These are called the five *senses*. There is the sense of *sight* and this works in the eyes. He can see a great deal with his eyes if he takes care of them and uses them properly. Then there is the sense of *hearing* and this works through his ears. Then there are two more: the sense of *smell* and the sense of *taste*. The nose is responsible for making the man smell anything that can be smelt, and the back of the tongue has the duty of making him taste anything that he puts in his mouth. Then there is another sense: the sense of *touch*. Even if a man could not see anything, nor hear anything, nor smell nor taste anything, he might still be able to touch things and know they were there because he touched them. The skin all over the body is responsible for a man's

sense of touch, but his fingers are most sensitive. If you want to touch anything, you put out a finger to do it with, don't you?

All these senses are given us that we may learn what is going on round about us. The eyes, ears, nose, tongue, and sensitive fingers have each their own work to do and none of them may do the work of the others. You can't smell with your ears, nor taste with your eyes, but light must come in at the eyes and sounds must enter by the ear, and taste can be made possible only by the tongue.

Some people have the five senses, but do not use them well, and others use them very quickly and thoroughly and are called "sensitive."

Suppose you go home to-day at dinner time. How do you know that dinner is ready? You can *see* it, if you go into the kitchen You can *hear* the meat sizzling in the oven You can *smell* it with your nose and very soon you will be *touching* it, and *tasting* it, so all five senses are at work to let you know it is dinner time.

Now suppose we talk about the eye. The eye is a ball inside a big hole that is called a *socket*, and there is a little flap or blind called the eyelid that can be pulled down in front to cover up the ball completely. Only a little bit of the eyeball can be seen even when the lids are open, and part of it is coloured, blue or grey or brown and round the coloured area there is a white part. In the middle of the coloured part is a little hole that looks black and the light from outside goes into the eyeball through that hole. It is really covered by a transparent skin When we look at anything we turn the eye so that light coming from the thing we want to see goes straight through the little hole. If the hole is not opposite what we want to see, then we can't see it. That is why we turn our eyes to look at something.

If you look at a cat's eye you can see the dark hole, called the "pupil" of the eye, showing clearly in the middle of the coloured region. Cats and all other animals possess the power of making this hole wide or narrow. If the light is strong then the hole can be made smaller so that too much light does not get in. Watch puss's eyes when she lies in the sun. The pupil is nothing more than a narrow slit, but watch her when there is no sun, when perhaps the light is growing dim, and you will see that the pupil is then much larger and rounder. Although you do not know it your eyes are constantly altering the size of the pupil to fit the kind of light that is falling on them. In bright light the hole is small and in poor light the hole is much larger. This movement of the eye goes on whether you are thinking about it or not, and is done without much trouble unless the eye has to keep changing too often. Suppose you were watching a flickering light, your eyes would have to keep opening and shutting the pupils very quickly. They might get very tired of doing this and then you might have a headache. That is why some people find it makes their eyes ache when they go too often to the pictures, especially if they sit in front where they are very near to the screen. It is not a good thing to go too often to the pictures.

If anything happens to prevent the light going straight into that little hole in the front of the eye, then we cannot see properly. It is very important to take care of the eyes, because if you do not, then you may lose the sense of sight. There are many bad habits you must avoid. Try to prevent dust from getting in your eyes, and if by chance it does get in then go and ask someone grown up to take it out for you. Don't rub your eyes, when you have dust or a cinder in your eye, if you do, you will scratch the eyeball with the sharp edges of the gritty dust, because dust is very often made of very, very small pieces of stone that have worn off the road.

You may sometimes do damage to your eyes by using them at the wrong time, or when the light is too strong. Don't play looking at the sun; only an eagle has eyes strong enough to do this, and if you have work to do in artificial light, don't do it with the light in front of your eyes, but sit

so that the light is above you, slightly behind, and falls on your work and not on your face But if the light is not good don't *try to see.* Wait until there is more light.

Children often think they can see better if they put their faces close to what they are doing, especially if they are reading

The proper distance between your face and your book is twelve inches, but some little children sit with their noses nearly touching their books. That is bad in every way, the child is not able to see any better and it is sitting in a very bad position, with bent shoulders and flattened chest.

Some people have eyes that do not see very well without the help of spectacles, and if you cannot see what the teacher writes on the board you must say so at once.

Take care of your eyes! If you lose the sight from those you have now, you cannot get a new pair.

Do you know what sounds are? Sounds are made by movements of air. If you hit a drum, or blow a trumpet, or strike the notes of a piano, or speak or sing, the air begins to shake in a special way and makes little waves of air, very very small but very strong. These little waves travel along in all directions, and sooner or later some of them reach you and pass into the hole which is in your ear and then you hear the sound. There is a good deal more of your ear than the piece shaped like a shell that you can see from outside.

That piece is shaped so that it collects the waves of sound in the air and allows them to pass down a tube inside One of the most important parts of the ear is called the ear-drum. This stands across the tube whose entrance you can see from outside. If you were small enough to creep inside an ear, you would find yourself inside a long passage and by-and-by you would come to a door blocking up the passage; and it would be a door that would not open This would be the ear-drum. When the air meets the ear-drum, it makes it shake very slightly but very quickly, and the drum shakes faster or more slowly according to the kind of sound that is coming along the passage. When the drum shakes, it sends a message to your brain and you know what kind of a sound is entering your ear.

This drum is very important; if it were injured and broken, it would not be able to help you to hear.

It is a very good drum because it can make you hear most kinds of sounds quite easily, but sometimes if very loud noises come suddenly they shake the ear-drum so hard that it breaks, and then it is very hard to get it to mend again. If it won't mend, then that ear is deaf and will never hear anything again. Sometimes little boys think it a good joke to go close up to someone who doesn't hear them coming and shout loudly close to their ear. This is a cruel thing to do. You know that if you hit a toy drum too hard you burst the parchment cover, and the drum can't make any more sound, so if you shout too loudly in anyone's ear you may burst their ear-drum and then they may not be able to hear any more.

Supposing the passage leading to the ear-drum gets choked up? If this happens then the sounds cannot reach the drum properly, and whatever is in the way will have to be taken away. The ear makes wax in the passage. This is part of its duty and is very good for the ear, but sometimes there is too much wax, and this has to be taken away by a doctor.

You must be very careful to wash your ears properly. Take a corner of your face flannel or sponge and wash as far into the hole as you can reach and then be just as careful to dry the hole with a corner of the towel. The wax in the ear collects dust This dust may make your ears very sore But whatever you do, never push hard things like pencils into the ear. You may push them too far, and push them through the drum. Sometimes little children put buttons or beads in their ears. These get close up to the drum and stick to it because of the wax, and then there is trouble. If anything gets in your ear, go and tell the

teacher, who will know what to do for you

There are all sorts of sounds—some of them are musical and some of them are not. Some you would call *noises*. Can you think of the difference between a noise and a musical sound? It is difficult to explain, but you all know that the ear listens very easily to musical sounds but is shaken up by loud noises.

There is far too much noise in the world.

Just sit quietly and see how many noises you can hear and distinguish.

Is there a clock ticking, or a train passing, or people speaking in the next room, or someone walking past in the street?

The difference between a town and the country is partly that there are always a great many noises going on at the same time in towns, while it is peaceful and quiet in the country. Ears get tired of listening to too much noise, and that is another reason why it does people so much good to go to the country for a holiday.

Can you make any difference to the noise of the town? Yes! quite easily. DON'T SHOUT! DON'T TRY TO DROWN THE VOICES OF EVERYBODY ELSE! People who never shout and who don't talk until they have something to say are always listened to.

B. Sleep.—The senses are at work when we are awake—whether we mean them to be or not. If your eyes are open you can't help seeing, and if there are sounds you hear them whether you want to or not. Every time you see something or hear something, your brain has made an effort, and when you have gone on hearing, seeing, smelling, tasting and feeling for some hours, your brain is tired. If you have been moving about, working and playing too, your body will be tired as well.

The cure for *tiredness* is *rest*.

You can rest the body by getting into a comfortable position and keeping still. This gives your body time to recover from being tired and to gain energy so that you can be ready to work and play again, but all the time you are resting the body you are seeing things and hearing things and smelling them; and all the time you are thinking with your brain, so the brain has to have a rest. You can only give the brain rest by going to sleep.

When you go to sleep, your senses go to sleep too and your brain stops thinking. Your sense of sight gets a rest as soon as you close your eyes, then the sense of taste, then the sense of smell, then the sense of hearing and last of all the sense of touch, goes to sleep. If you waken people by touching them very gently they will waken more quickly and more easily than if you shout at them. While the brain is asleep, the body is at rest and is busy making up for all the work and play it has done when its owner was awake. It takes about eight hours of sleep to do this. But while we are asleep the body has to grow too.

If there is a baby in your house, you will know that it spends most of its time asleep. This is because it is so small that it has such a lot of growing to do, and it grows fast while it sleeps. As children grow up they grow more slowly, so they need a little less sleep than a baby

How old are you? Now, I wonder if you all get as much sleep as you really need. What time do you go to bed? What time do you get up? If you are not more than seven years old you ought to have twelve hours' sleep. If you are between seven and nine you ought to sleep eleven hours; boys and girls of between nine and twelve need ten hours' sleep, and when you get to sixteen you may do with nine hours, and when you are grown up you will only need eight hours. That is because you are not growing and only need sleep to rest the body and get rid of tiredness.

Perhaps when you have added up the number of hours you spend in bed you find they are fewer than they ought to be. You may say that you don't feel tired and can manage very well on less than you are supposed to have. Sometimes children have too little sleep for their years, but when

they come to be grown up they find they are not quite so strong as other people who had more sleep when they were children.

Do you remember how you should go to sleep?

(1) With your windows open.
(2) With just enough bed clothes to keep you warm.
(3) Not curled up like a cat.
(4) And *not* with the bed clothes over your head.

Even when you are asleep, the body is not resting completely. Something is going on inside, for example you are still breathing, and your heart is still beating, and the food you have eaten is doing you good inside, but all these things are going on as slowly and quietly as may be, so that you may have as complete a rest as possible.

If you sleep properly and for the right number of hours each night, your body and brain will be properly rested, and you will be ready to get up in the morning strong and quick to do the next day's work and the next day's play.

That is what is meant by the old proverb:

" Early to bed, early to rise,
Makes a man healthy,
Wealthy and wise."

X. GOOD CITIZENSHIP

Public Hygiene.—If someone asked you how *rich* you are, you might tell them that you had a money box at home and that there was some money in it. There might be quite a lot of money in it and yet if you only counted the *money* you had, you would not have counted nearly all the riches you have. What other riches have you besides some money?

You probably have things that are your very own, that you think a great deal of. Perhaps you have toys and books that belong to you and that you take care of and put safely away.

Suppose you left your book on a seat in the park! and then remembered and went back to look for it, and suppose in the meantime someone else had found it and torn some of the pages out just because it was not theirs and they did not value the book. You would be sorry and would take care not to leave it outside again If you find anything in the street that does not belong to you, but that someone else has lost, take it to your teacher or give it to a policeman, but don't destroy it, and don't keep it, until your teacher or a policeman has told you what to do with it.

There are some possessions that people have to leave in the street, and they have to leave them there and hope that no one will do them harm. Suppose you had a motor car and were going to see someone in a house, you would have to leave the motor car in the road. Suppose, while you were away, some boys and girls came along and squeaked the horn and burst the bulb, or threw stones and broke the windows or poked sticks at the car and made scratches on the paint work. Don't you think you would be very angry? When you see a motor car in the road, leave it alone; *it is not yours.* There are quite a number of door bells in the road; nearly every house has one. They belong to the people who live in the house, and are intended for those who are calling at the house. When the door bell rings, the people inside know there is someone outside who wants to speak to them. Unless you are leaving a message at the house and want to speak to the people inside *you have no right to touch that bell* You may think it

funny to ring the bell and then run away, but supposing you were inside the house, and had to leave your work and run downstairs or upstairs to answer that bell every time a mischievous boy chose to ring it and run away, you would be angry.

There are a great many things that make you rich, because although they do not belong to you entirely, you share them with others.

There are many things at home that you share with your family. You all use the furniture in the house, for instance, and you all share the fire. Then when you come to school you share the things in school with all the other children. You share the desks and the pictures and the playground

In your town (village, city, as appropriate) you share many things with the other people who live there, and the better your town is looked after, the richer all the people are. For example, are the streets of your town well-lit? Supposing there were no street lamps, as in some country places! People who are out at night in some parts of the country have to carry lamps Do you?

Then there are trams or buses. If your town is a large one, you might have to walk a long way to the shops if there were no trams or buses.

Have you got a library in your town, where you can go and read books or borrow them to take home? Have you got a museum that you can go to and learn about creatures and people who live in other countries?

(Other "shared possessions" will be suggested by the children, e.g parks and gardens, swimming baths, churches, picture houses, etc.)

Now if the town belongs to everybody, who looks after it? A number of people who live in the town are asked to be a Council and together they make arrangements for looking after the town They have a large number of men working for them and everyone who lives in the town pays a little towards the wages of the people who work for the town

Can you think of anything this Council does?

(Trams, buses, electricity, water supply, parks and gardens and other municipal or urban activities might be touched on here.)

One of the things the Town Council is most particular about is to keep the town clean. They send men round to collect the rubbish from people's private dust bins, and they sweep the roads and water them to keep the dust from blowing about.

It is most important that a town should be kept clean, and that the roads should be cleared of manure. One reason is that where there is manure left lying about, there are sure to be flies in great numbers, and flies, as you will see in a moment, are responsible for spreading sickness and ill-health from one person to another.

You have heard several times of the very small specks floating in the air that are called germs. These germs are in enormous numbers wherever there is manure, or rotting vegetables, or anything that has been allowed to go bad. The smell that these things give off is unpleasant to us, but it proves very attractive to flies, and the insects can smell it a long way off and they collect on it in large numbers. Then the flies lay hundreds of eggs in the manure heap and within a day each egg hatches out into a little legless grub that eats as fast as it can and grows bigger and bigger Then it makes a hard case on the outside of itself and lies quite still for a few days (if it is summertime) and all the time the little grub inside is changing into a fly. At the end of a few days (if it is summertime) the end of the case flies open like a lid and out comes a brand new fly ready to lay its eggs in a day or two. Now if there are 100 flies in a manure heap and they lay 150 eggs each and they do this three times in their lives, how many grubs will there be from the 100 flies?

$100 \times 150 \times 3 = 45,000.$

Instead of 100 flies there will be 45,000 flies, and if all these 45,000 flies lay 150 eggs within a week, how many more will there be? The danger of flies is that they have hairy feet, and they bring from the

manure heap hundreds of little germs clinging to the hairs of their feet and then they walk about on our food and leave the germs behind. If there are no manure heaps and no places where untidy rubbish is allowed to go bad there will be no places where the flies can lay their eggs. So this is why the streets are so carefully swept and the manure got rid of. You should not let flies walk about on anything you are going to eat. It is a good plan, if there are a lot of flies about, to put paper covers over food.

Perhaps some day it will be your turn to be a member of the Town Council and look after the town (city, village) but in the meantime there is quite a lot that you can do.

Those who have great possessions must take care of them. Who takes care of the things you share with other people? Do you?

The things in school, for instance.

(Teachers will here find an opportunity of indicating the wrongfulness of misusing desks, scratching paint, throwing toffee wrappers on the floor, and other misdeeds that children thoughtlessly commit against common property in school.)

And what about the things you share in the town? The library books, for example! Suppose you borrow a book to read and, when you come to page 107, two pages have been torn out by the person who had borrowed the book before you. You won't know what happened in the two missing pages. So be very careful when you have the book to see that it comes to no harm. Don't turn the corners of the pages down to mark the place. If you want to mark the place put a little piece of paper in the page with its edge sticking out. Never turn an open book face downwards. It breaks the back and it dirties the paper. Do you remember when we were talking about washing we said it was very necessary to wash our hands clean before we touched books, because dirty hands make dirty pages, and dirty pages carry dirt and sometimes germs to the next person who reads the book? Do you keep library books clean?

Now what about the street? It belongs partly to you Do you use it well? Other people have to use it too, but sometimes children think it belongs to them alone. Listen to some of the things they do in the street.

Sins of the Pavement.—

(1) Playing football, so that passers-by cannot pass in safety.
(2) Shouting and quarrelling.
(3) Roller skating and
(4) Walking along three or four abreast and making older people step off the pavement.
(5) Throwing stones at lamp-posts.
(6) Making slides on roads and pavements in frosty weather.
(7) Leaving orange and banana skins and pieces of paper on the ground.
(8) Chalking silly pictures on walls.

These are all habits that interfere with other people's share of the public streets, and if children want to share properly in the comfort and convenience of using the streets they must observe the rules of good behaviour.

Now what about the country?

Have you ever been for a day in the country?

Did you pick flowers to bring home, and did you drop them on the road because they looked faded or because you picked so many you could not carry them?

There is a proper way to pick flowers. Break the stalks off close to the ground but don't pull the roots up. If you do, the plant will be destroyed and will not bear any flowers next year. Don't pick too many flowers, and wrap up the ends of the stalks in big green leaves before you tie them. It is a good plan not to gather your flowers until it is nearly time to go home, and then they do not have to wait so long before they are put in water. If you have to put your flowers down, don't put them in the sun.

Sometimes if you go into a country place on a Monday, if it is not very far from a town, you find pieces of paper, orange peel and cigarette ends, all about it. It is quite clear that the people who went there on Saturday and Sunday didn't mind in the least leaving litter all over it. They quite forgot that the people who went there on Monday would have to look at all the untidy litter left behind. Sometimes people who love the country and hate to see litter left about write messages to those who visit the place and put them where visitors can see the messages to remind them not to throw papers down.

Here is one —

"Resemble not the slimy snail
Who with his slime records his trail.
Let it be said, where you have been
You left the face of Nature *clean*"

Here is another from Aberystwyth:—

"Ye who pass along the paths,
I would fain remind you
Orange peel and paper must
Not be left behind you."

[This course of lessons in Health Education has been written by Dr Dorothy Hanson, with introductory notes to teachers by Audrey M. Stratford.]



From the picture by Rossa—the Uffizi, Florence] [*Photo*: *Alinari*

ANGEL PLAYING THE LUTE

SHORT STORIES FOR ODD MINUTES



From the picture by Bellini Giovanni—the Frari, Venice] [*Photo: Anderson*

PLAYING ANGEL

FAIRY STORIES AND ANECDOTES

GOOSEBERRY GOLD AND GOOSEBERRY RED

IN Farmer Smith's garden ripe golden gooseberries hung in large numbers on a fine gooseberry bush. They shone under the green leaves like golden fairy lamps. They were all splendid fruit, but one in the middle was twice as large as any of the others.

As they hung on the bush, the gooseberries talked to each other. "I wonder what will happen," said one, "to such fine fellows as we are. As for Miss Gooseberry Gold, who is the biggest of us all, she ought to be our queen."

On a bush near by hung many red gooseberries. They were large and fine too, and among them also was one twice as big as any of the others. Said a red gooseberry, "Something wonderful will happen to us all one day, and as for Master Gooseberry Red, he ought to be king."

A gentle wind passing over the bushes laughed to hear what the gooseberries were saying. "Puff!" he blew, and Miss Gooseberry Gold fell to the ground. "Puff!" he blew again, and Master Gooseberry Red fell beside her.

"Come," they said to each other, "let us go to a land of our own, where we can be king and queen." So off they ran as fast as they could.

"Puff! puff! puff!" blew the wind over and over again. Gooseberries gold and gooseberries red fell from the bushes on all sides, and went running after Miss Gooseberry Gold and Master Gooseberry Red.

They ran down the lane and through the wood till they came to a bank of soft moss. "Miss Gooseberry Gold," said Master Gooseberry Red, "let us sit down here. This bank shall be our throne, and we will be the king and queen of the land."

All the other gooseberries came up and bowed low before their king and queen. Some were quite out of breath because they had run so fast.

Then they sat in rows to hear the news. Bees flew round humming their low song. Butterflies kept off the heat of the sun with their shiny wings. They were all so glad to have a gooseberry king and a gooseberry queen.

All went well till a little boy and girl came wandering through the wood. "Look, look!" cried the boy, "see all those fine gooseberries on the moss. How could they have got there?"

"Never mind," said the little girl, "let us eat them. This biggest red one shall be for you, and this biggest golden one for me."

So that was the end of all the gooseberries.

THE MAGIC LETTUCES

THERE was once a man who had a magic cloak. He had only to put it on, and away he could fly to any place he liked. One day on his travels he met a pretty maiden and fell in love with her. "Will you marry me?" he asked.

"Yes, I will," she replied.

"Then come with me to my home," said he. He wrapped his cloak round both of them and they flew away together.

Now the maiden had made up her mind not to marry the man, but to steal his magic cloak for herself. Presently she said, "I am tired, and should like a rest." So they came down into a little wood, and there she made a soft bed of moss and leaves for the man. It was so comfortable that as soon as he lay down on it he fell asleep. Then the

maiden picked up the cloak very gently, put it on, and wished herself at home once more.

When the sleeping man woke up he looked around for the pretty maid and the magic cloak Both had vanished. He was full of sorrow that such a lovely maid should play so cruel a trick, and he set out to walk back to her home.

He wandered along till he came to a field of lettuces. As he was feeling hungry he gathered and ate some in passing At once his skin grew hairy, his ears grew long and he was turned into a donkey. He went on eating the lettuces till he came to the other side of the field. Here grew the best lettuces of all As soon as he had eaten one leaf of these, his skin grew smooth again, his ears shrank and he became a man once more.

"Ah," he said, "these are magic lettuces, and they will be useful to me" He picked one of the bad lettuces which had turned him into a donkey and one of the good lettuces which had made him a man again. He put them in his pocket, and set out once more.

He went on and on for many days, till at last he reached the pretty maiden's home and saw her sitting by the window. "Give me back my cloak," he said to her. She laughed in his face. "I shall give you nothing," she said. "Have you anything to give me?"

The man showed her the bad lettuce. It looked so fresh and crisp that she put a leaf into her mouth. Very soon, her pretty smooth skin grew hairy and her little pink ears grew long and ugly. "Hee-haw, hee-haw," she cried. She, too, had become a donkey.

"That is a punishment for your unkindness to me," said the man. He took his cloak and went away. He came back every day to see the donkey, however, and at last she told him how sorry she was for her unkindness. When the man saw that she was really sorry, he gave her the good lettuce to eat. At the first bite, the pretty maiden stood before him.

"Oh, forgive me, please forgive me," she begged.

"Indeed I will," he replied. Then they were married and lived happily together all their days.

THE GOLDEN LADDER

A LONG time ago, when a young Prince was out hunting in a forest, he heard sweet singing. He followed the sound, and it led him to a tower which had no doors and no stairs. A lovely girl stood at a high window singing more sweetly than a nightingale. As the Prince watched and listened, an old Witch hobbled up to the foot of the tower.

"Rapunzel! Rapunzel!
Let down your hair,"

she cried. The beautiful young girl leaned out of the window and let down her golden hair; it was so long that it reached to the ground. The Witch climbed up the golden hair and got in at the window. Full of wonder and delight, the Prince said to himself, "I, too, will use this golden ladder."

Presently, the old Witch climbed down again, and hobbled off. Then the young Prince came out of his hiding place and sang,

"Rapunzel! Rapunzel!
Let down your hair!"

At once the shining golden hair came down to him, and he climbed up and got in at the window. How surprised Rapunzel was! She had never seen a man before! When she was a baby the old Witch had taken her from her parents, and shut her up in the tower. Rapunzel promised to marry the Prince as soon as she could get out. The Prince said, "I will bring you a silken ladder when I come again, and will take you away with me to be married"

When the old Witch came again, Rapunzel said without thinking, "My Prince climbs up much faster than you do, granny."

"What? What's that? You've had a Prince up here?" screamed the old woman. She was red to the end of her nose with rage. She cut off Rapunzel's golden hair, and turned her out into the forest to die of hunger. Soon the Prince returned with his silken ladder. *Once more he sang,*

"Rapunzel! Rapunzel!
Let down your hair."

The old Witch tied Rapunzel's golden hair to a window bar, and let it down. Up climbed the Prince, but when he reached the window he found only the spiteful old Witch.

"Ha! ha! the pretty bird has gone from the nest. A cat has caught her!" she said, and pushed the Prince out of the window. He fell down into a prickly bush. Long sharp thorns ran into his eyes and blinded him.

As the blind Prince tried to feel his way out of the forest, again he heard sweet singing. He groped his way to the voice and found his dear Rapunzel once more. She wept over him because he could no longer see. As she wept, two of her tears fell into his eyes and gave him back his sight. Then they were very very happy, and the old Witch, seeing them from the high tower, choked with rage and died. The Prince took Rapunzel to his father's palace; they had a splendid wedding and lived happily ever after.

THE KING OF THE LIONS

ONE day a donkey ran away from his master. He galloped merrily down the road, and came across a party of lions trying to choose themselves a king.

"Hee-haw," brayed the donkey, laying back his long ears.

The lions had never seen a donkey before.

"What a noble animal!" said one.

"What a fine voice he has!" said another. "It would frighten all the beasts of the forest."

"Let us ask this animal with the great voice to be our king," said a third.

"Good!" roared many voices.

"No, wait a moment," said the oldest. "Let us see first if he is fit to be our king. We will invite him to travel with us and then we shall be able to see whether he is as noble as he looks."

The lions then crowded round the donkey and the oldest lion asked him to be their king "First, though," he added, "let us all travel together, so that you may see how you like your new subjects and we may learn to know our new king."

The donkey was delighted, for he thought, "I can easily trick these lions." He agreed to what the old lion said, and the party set out on its way.

Presently they came to a high stone wall. The lions all leaped over it easily, but the donkey caught his hoofs on the top. When at last he managed to get over the lions were all laughing at him.

"Can you do no better than that?" asked the old lion.

"Oh, yes!" replied the donkey. "When you saw me stop to rest on the top of the wall I was only thinking how much better it would be if it were knocked down. You try it."

The old lion pushed with his paws. Then he flung his back against it, and then his side. All in vain! Not a stone was moved.

"Hee-haw, it is easy," said the donkey and he began to kick with his hard hoofs at such a rate that the stones flew this way and that—clash! clash! clatter! clatter! Soon the wall was nothing but a heap of rubbish, and the donkey, climbing on it, brayed loudly in triumph.

The lions wished to crown him there and then, but the oldest lion asked them to wait a little longer.

On they went, until they came to a huge field of prickly thistles. The donkey dashed into the field, and the lions followed him. Suddenly they roared with pain and turned back, limping. Their soft pads were full of prickles.

"Hee-haw," brayed the donkey, in scorn. He put down his head and began to eat the thistles, which he loved.

"Look! look!" cried the oldest lion. "Our great master has no fear of the little thorns Fetch the crown quickly. As soon as he comes from the field we will beg him to be our king."

So that very day they crowned him.

THE SLEEPING BEAUTY

MANY years ago, in a country so far away that even the fastest aeroplane would never reach it, a baby princess was born. She was like a beautiful flower Her cheeks were as soft and pink as rose petals, her eyes were a forget-me-not blue, and her hair was as golden as the buttercups When she opened her mouth to cry (which was very seldom) it was like a poppy bud bursting into bloom.

The king and queen were very happy to have such a sweet little daughter, and wondered what name they should choose for her. The queen loved roses, especially the wild ones that children gather in the hedges—the pink and white briar roses. So as it was the first day of June (which is the birthday of the roses) she said, "We will call her Briar Rose," and the king was charmed with such a pretty name for his baby girl.

Cards of invitation were sent out to all the people in the kingdom for a christening party, and the rose fairies, who were to be god-mothers, had special seats near the baby. It was a wonderful feast. The bells rang gaily, the fountains played and everyone was happy Did I say everyone? No, there was one, the Yellow Rose fairy, who was furious because she had received no invitation The queen had quite forgotten her. She waited and waited, getting more and more yellow with jealousy, until the feast was nearly over, and all the other fairies had offered their gifts. One gave beauty, another gentleness, and another obedience Each had given her fairy gifts, except the Crimson Rose fairy, when suddenly the Yellow Rose fairy burst into the room Without a curtsey to the king and queen she pushed her way to the cradle of the tiny princess. In a loud voice she shouted, "Your gifts will only last till she is fifteen, for on that day she shall prick her finger with a spindle and fall down dead." Then, shaking her fist at them all, she disappeared

But fairy Crimson Rose had not yet spoken. Lightly she stepped forward and said, "Do not fear. The princess shall not die. As the crimson drop falls from her pricked finger she too shall fall,—but into a deep sleep, from which she shall awake at the kiss of a prince upon her cheek."

Then the king arose and ordered all his people to destroy every spinning wheel in the kingdom, and they gladly obeyed him, because they did not wish any harm to come to the little girl. Princess Briar Rose grew up and became the joy of all around her. She was so sweet that everyone loved her. She had, however, one tiny fault. She was very curious. Now it is good to wish to know about things that will make us wise, but it is not polite to pry into what does not concern us.

It was the afternoon of the princess's fifteenth birthday, and she was busy arranging her presents on a table. The table cover was ugly and did not please her. She thought she would look in one of the top rooms of the castle for a pretty, bright piece of satin or velvet

While her ladies were talking together, she slipped away and tripped up the stairs. She went higher than she had ever been before, and came to a winding staircase. Up she mounted till she saw a queer old door covered with iron bars. She lifted the latch and went in.

By the window sat an old, old woman working at a strange wheel which seemed to send out long soft pieces of snow.

The princess went up to her. "What have you there?" she said. "May I look at your funny wheel?"

And the old woman (who was really the bad Yellow Rose fairy) answered, "Come and try to turn it yourself."

The little princess picked up the spindle, but so eagerly that the sharp point ran into her finger. A crimson drop of blood appeared, and as it trickled to the ground the blue eyes closed and she fell into a deep sleep. With a horrid laugh the old woman disappeared, just as the other fairies like a swarm of butterflies flew in and carried the princess off to her own beautiful room.

There she lay on her golden bed, her ladies round her fast asleep too, for the spell was so strong that all the people in the castle slept.

Days, months and years passed, until a hundred years had gone by, and the castle was quite hidden from sight, for the gardeners were sleeping so that the roses grew as they pleased and spread everywhere. The briar roses climbed higher and higher until they reached the room of the princess. They peeped in the windows as if they were longing to see her - some were even bold enough to peep at her, with their tiny faces pressed close to her pillow.

"But hark! someone is coming—coming nearer and nearer"

Prince Charming, from a country far away, had heard of the enchanted castle and the hedge of roses that grew round it. He made up his mind that he would try to pass through it. He knew that many had tried and failed, but he was very brave and with a heart full of courage he began cutting his way through—

"Thorns, ivies, woodbine, mistletoe
And grapes with branches red as blood,"—

until he reached the courtyard. Amongst the sleeping servants and curled-up dogs he saw the briar rose twining its way. He followed it through the state room where the king slept with nodding head, which made the jewels in his crown glitter and sparkle. Beside him the queen, open-mouthed, lay sunk deep in slumber. All round them the courtiers were sleeping.

On and on passed Prince Charming, ever following the thick thorny branches of the briar rose. At a door where the roses grew thickest he paused, and forcing the clusters away went in. On the bed was lying the most beautiful lady he had ever seen—

"The gold of evening in her hair,
The blue of morn shut in her eyes."

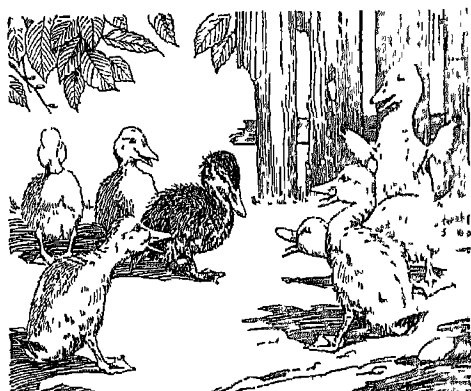
For a long time he gazed at the princess and longed to see the blue of her eyes and to hear her voice. Then he dropped on one knee and gently kissed her cheek The bad fairy's spell was broken. The princess stirred, opened her eyes and smiled at him. As she did so everybody woke in the castle. The king sat up and put his crown straight; the queen arranged her hair and tried to look as if she had not been asleep; the king's ministers went on with their long speeches, and all the servants began the work that had stopped a hundred years before.

Of course Prince Charming and Princess Briar Rose were married very soon, and he took her to his father's court "over the hills and far away," where they lived happily all the rest of their days.

Questions to follow the Story-Telling.—

Where did the Sleeping Beauty live? When was her birthday? What was the colour of her eyes? Why was she called Briar Rose? What people went to her christening party? Who was not invited to the party? What did the Yellow Rose fairy say at the party? What did fairy Crimson Rose say? What orders did the king give about spinning wheels? How old was the princess when she climbed to a room at the top of the palace? Whom did she find in the room? What happened to the princess? Where did the fairies take the sleeping princess? How long did she sleep? Who came along to find her? What did Prince Charming find when he got inside the palace? How did he wake the princess? What happened to the princess soon afterwards?

THE UGLY DUCKLING



AN old hen once brought up a large family of ducklings. All, except one, were handsome little fellows. The last hatched, however, was so ugly that everyone called him the Ugly Duckling. The other ducklings made fun of his queer looks, and when the Mother Hen was not looking they would peck him and steal his food and chase him round the farmyard till the poor Ugly Duckling wished himself dead.

One day Mother Hen led her brood to the duck pond to see how they took to the water. The little ducklings splashed and dived to show her how clever they were, but the Ugly Duckling was the bravest of all and beat his brothers and sisters in all their games and races.

"Why," said Mother Hen, "your youngest brother swims better than any of you."

This praise only made the ducklings hate their ugly little brother more, for they were now jealous of him. They treated him so badly that at last he made up his mind to run away. "No one wants me here," he sighed "Perhaps in the big world I may be able to find friends." So when no one was looking, the Ugly Duckling slipped under the farmyard gate and wandered away down the dusty road

The Ugly Duckling walked on till he came to a wide moor where a number of wild ducks were feeding. "Ah," thought he, "perhaps these ducks are not like those in the farmyard and will be friendly to me." As soon as they saw the stranger the wild ducks came flying round to look at him.

"How do you do?" said the Ugly Duckling politely. In answer the wild ducks only laughed.

"How ugly you are!" said one of them. "We do not want you with us. Go away!"

Just then there came a terrible sound—the "pop-pop" of a gun. The wild ducks rose in the air in a cloud, and flew away with loud cries, but the Ugly Duckling stayed where he was, too terrified to move. Suddenly a great dog burst through the reeds, looking for the ducks which his master had shot. The Ugly Duckling's heart stood still with fear, but the dog, after sniffing at him, passed him by and did him no hurt. "Even a dog will not look at me, I am so ugly," thought the poor little duckling, as he set out on his lonely way once more.

At sunset that evening the duckling reached the edge of a wide lake, and plunged in to cool his weary feet. As he was swimming on the quiet waters, he heard strange cries overhead. Looking up, he saw flying across the lake a flock of large birds with long necks and beautiful snow-white feathers. They were swans. The Ugly Duckling had never seen a swan before, and he thought that never in his life had he seen such lovely creatures.

"How I wish," he sighed, "that I were beautiful as they are, and not a useless little Ugly Duckling!"

All the winter the Ugly Duckling lived by the great lake. He was often hungry, and still more often cold. Sometimes the lake was frozen and he had to break the ice before he could swim about and get warm. He began to wish himself back in the farmyard, where there was always plenty to eat and a warm shed in which to sleep at night.

The winter passed at last, and spring came A warm sun shone and gentle breezes

blew. "This is glorious!" said the duckling, "How well and strong I feel." He decided to go for a long swim. "How pleasant and warm the water is," he said, "and how good it is to be alive!"

He looked down into the still water, which was like a mirror. What was that he saw? He looked round behind him. No one was in sight. He peered into the water again, and could hardly believe his eyes. Instead of a big, ugly, dirty grey duckling he saw a beautiful snow-white bird with a long graceful neck. It was himself! The Ugly Duckling had grown into a swan.

"Now I know," he said, "why the ducks in the farmyard and on the moor would have nothing to do with me. I was not their brother at all—common creatures, always dabbling in mud! I know, too, why that dog did not hurt me. He was looking for ducks, not swans."

Just then the flock of swans he had seen before flew past, calling to him as they went, "Come, brother, come and join us." The Ugly Duckling, now a swan too, spread his broad white wings and flew up to meet them with hoarse cries of joy.

A CUP OF COLD WATER

THIS is the story of a gallant English gentleman named Sir Philip Sidney, who lived in the days of Queen Elizabeth. All men loved Sidney, because he was so brave, so unselfish and so polite, and the great queen herself called him "the jewel of the times."

Sir Philip Sidney met his death in battle at a place named Zutphen, while still a young man. All day he fought bravely, leading his men into the thickest of the fight. Two horses were killed under him, but each time he mounted a fresh steed and fought on. At last a bullet struck him and he fell, dying, from his saddle

He was carried back to camp, but the surgeons could do nothing for him, and he was laid on the ground to die. Presently he became very thirsty, for it was a scorching hot day, and he had a high fever.

"Water! water," he murmured, but there was none in the camp.

"Ask a soldier for some from his water bottle," said the surgeon.

Most of the soldiers had drained their bottles long before. One or two men, however, had a little water left, and a cupful was obtained for the dying hero. As he raised it to his lips, Sidney saw a wounded soldier lying near him, gazing longingly at the cup. He forgot his own thirst and held out the cup to the wounded man, saying with a smile, "Friend, thy need is greater than mine."

After Sidney was dead, this story became known, and all who hear or read of it feel that this last noble act of unselfishness was a fitting end to a hero's life.

THE JEW'S WILL

A RICH Jew had to send his son to a far country. Before his son came back the Jew died, and his will was read All the Jew's riches were left to his slave, except that his son might choose one thing for himself. The slave was full of joy and went to the far-off country to tell his master's son what had happened. The son was very sorrowful at the news of his father's death and very surprised that all his goods, except one thing, had been left to the slave.

The son went to see a wise man and said to him, "Why has my father treated me so badly?"

The wise man answered, "Your father was a very clever man. If he had left everything to you, thieves would have stolen it all while you were away. He left all to his slave because he knew the man would take care of what he thought was his own property."

"How does this make me any better off?" asked the young man.

"You know that all a slave has belongs to his master," replied the wise man

"Choose the slave as the one thing you want, then all the goods are yours."

At last the young man saw how clever his father had been in taking care of the fortune for his son. The young man took the slave and all the riches his father had left.

THE HERON

ONCE upon a time a heron was walking by the side of a stream. It was a lovely summer day and the sun shone brightly. In the clear water the heron could see some fine carp and pike darting backwards and forwards. The large fish came so close to the bank that the heron could have easily picked one up in his long beak; but no! He said to himself, "It will be better to wait till I feel really hungry Besides, I must keep to my rules for eating, and only take food at my proper meal times."

When, however, the heron began to feel really hungry, and went to look in the stream for fish, the carp and the pike had swum away and he could see only some tench darting about in the water. This food did not please him at all.

"These are just common tench," said the heron. "Such poor food is not good enough for one of my rank. I will wait till something better comes along"

Away swam the tench, and, though the heron watched and waited a long time, only a few little gudgeons were left "Gudgeons!" he cried scornfully, "Heaven forbid that, hungry as I am, I should open my beak for such mean creatures!"

As time wore on the heron's hunger became too much to bear. He sought up and down the stream, but no fish of any kind, large or small, could he find. By this time he was starving and ready to eat anything At last he caught sight of a slug crawling on the bank Quickly he snatched it up and gobbled it down, thankful for even the smallest and most humble meal

We must take our opportunities when they come

THE THREE BROTHERS

THREE princes who were brothers each fell in love with their cousin, a beautiful princess. One day their father told the three princes that whichever of them brought him the most wonderful thing in the world should marry the princess. Then the three brothers started off on their travels to find the most wonderful thing, and they settled to meet again at the end of a year.

The eldest, Prince Houssain, after journeying for many days, saw a merchant trying to sell a carpet for forty purses of gold. "You ask too much for your carpet," said the prince.

"Oh, no!" replied the merchant, "just sit down on my carpet and wish yourself in any place you like."

So Prince Houssain sat down on the carpet and wished to be in his own home, and at once he found himself in his own room. He returned to the merchant, gave him forty purses of gold and wished himself at the meeting place, where he waited for the other two brothers

"This carpet must be the most wonderful thing in the world," said Prince Houssain, "I shall be able to marry the princess."

The second son, Prince Ali, travelled a long, long way and then saw a merchant showing a plain white wooden tube, for which he wanted forty purses of gold "You want a lot of money for your tube," said Prince Ali.

"Oh, no!" replied the merchant, "just look through it and wish to see someone"

Prince Ali looked through the tube and wished to see the princess, and there she was sitting among her ladies in his father's palace. The prince bought the tube for forty purses of gold, went back to the meeting place and waited with Houssain for Ahmed, the third brother, to return.

Prince Ali said to himself, "This tube must be the most wonderful thing in the world, I shall be able to marry the princess"

The third son, Prince Ahmed, travelled for many weeks and then met a merchant who wanted forty purses of gold for an apple. "Forty purses of gold is a lot of money for an apple," said Prince Ahmed

"Oh, no!" replied the merchant. "Just let the dying man in the next street smell this apple."

So the dying man smelled the apple and became quite strong and well again. Then Prince Ahmed gave the merchant forty purses of gold for the apple, and went back to the meeting place where he found the two other brothers, Houssain and Ali, waiting for him. The brothers showed each other the three wonderful things and none could say which was the most wonderful.

Prince Houssain said to Ali, "Lend me your tube," and he looked through it and wished to see the princess. Alas! he saw his dear princess lying very pale on her bed with her maids weeping round her. He cried, "The princess is dying!"

Quickly they all jumped on the carpet and wished themselves in the princess's bedroom. Prince Ahmed gave her his apple to smell, and at once she was as well and lovely as ever The princes then went to their father and said to him, "Which of us has won the princess?"

"My sons," he answered, "each of you had a share in curing her, so we must settle the matter another way. Take your bows and arrows and shoot as far as possible, and the one who shoots the farthest shall marry the princess."

The three brothers went into a great meadow to shoot their arrows, and thousands of people came to watch. Houssain shot his arrow a yard beyond the farthest tree. Ali shot his two yards farther still, but Ahmed's arrow went so far that it could not be found at all Their father therefore decided that the second brother, Ali, should marry the princess.

Ahmed wandered about looking for his lost arrow, and came to a fairy's palace. Now Ahmed found out that this fairy had sent the three merchants with their wonderful things. She had also carried away Ahmed's arrow, as she wanted to marry him herself. Ahmed fell in love with the fairy and married her, and in the end he became ruler over half India.

As for Houssain, he married the princess's dearest friend, and he was quite satisfied

THE BRAVE LITTLE HUGUENOT

ABOUT two hundred years ago, there lived in a village in France a weaver named Daniel Bonnet with his wife and three children, the youngest a little boy only five years old. In those days, all churches in France had the same kind of services. Some people, however, wished for other churches, where they could worship God in the way they thought right. These people were called Huguenots The leaders of the churches hated them, and put to death all men and women found to be Huguenots. The Bonnet family were Huguenots. They were very unhappy, and at last Daniel Bonnet decided to leave France and to take his wife and little ones to America, where they would be free to worship God as they wished

The parents knew that if their plan were discovered the soldiers would stop them. Accordingly they dressed themselves as peasants, bought a donkey, and a supply of cabbages, turnips, carrots and other vegetables. The three little Bonnets were then put on the donkey's back

"My dear children," said their father, "we are going to cover you up with vegetables, so that no one shall guess that we are taking you away. Do not move, nor make a sound, until we lift you down again, for if the soldiers find you, we shall all be killed."

"We will be as still as three little mice," whispered the children

Then the parents hid them under a pile of vegetables, and set out as if going to market On their way they met a soldier, who guessed that they were escaping Huguenots and had hidden their children under the vegetables "Going to market, are you?" he said with an evil laugh. "Let me see if your carrots are tender," and he thrust his sword through the donkey's load No sound came from it, and the soldier, thinking he had made a mistake, rode away.

The poor sad parents felt sure that their children had been killed. Yet they dared not stop to see what had happened, but hurried on till they were far away from the village and no one was in sight Then at last they took off the vegetables. The three little faces soon appeared Two were smiling gladly, but the third was white with pain Their tiny son had been pierced through the thigh by the soldier's sword.

"But I did not make a sound, mother," murmured the brave little fellow proudly, as he fainted in her arms.

Thanks to the courage of this little Huguenot, the family were able to reach America, and make a new home for themselves in a free land.

THE STORY OF THE MATCHES

THERE was once a bundle of matches, who were all extremely proud of their high descent, for the tall fir tree, from which each of them was a splinter, had been a tree of great antiquity, and distinguished by his height from all the other trees of the forest. The matches were now lying on the mantelpiece, between a tinder-box and an old iron saucepan, and to these two they often talked about their youth "Ah, when we were upon the green branches," said they; "when we really lived upon green branches—that was a happy time! Every morning and evening we had diamond tea· that is dew; the whole day long we had sunshine, at least whenever the sun shone, and all the little birds used to tell stories to us. It might easily be seen, too, that we were rich, for the other trees were clothed with leaves only during the summer, whereas our family could afford to wear green clothes both summer and winter But at last came the wood-cutters: then was the great revolution, and our family was dispersed. The father trunk obtained a situation as mainmast to a magnificent ship, which could sail round the world if it chose, the boughs were carried off to various places, and our work was henceforth to kindle lights for low, common people. Now you will understand how it comes to pass that persons of such high descent as we are should be living in a kitchen."

AN ADVENTURE WITH A LION

AFTER we had resided at Ceylon about a fortnight I accompanied one of the governor's brothers upon a shooting party He was a strong, athletic man, and being used to that climate (for he had resided there some years), he bore the violent heat of the sun much better than I could; in our excursion he had made a considerable progress through a thick wood when I was only at the entrance

Near the banks of a large piece of water, which had engaged my attention, I thought I heard a rustling noise behind, on turning about I was almost petrified (as who would not be?) at the sight of a lion, which was evidently approaching with the intention of satisfying his appetite with my poor carcass, and that without asking my consent. What was to be done in this horrible dilemma? I had not even a moment for reflection; my piece was only charged with swan shot, and I had no other about me; however, though I could have no idea of killing such an animal with that weak kind of ammunition, yet I had some hopes of frightening him by the report, and perhaps of wounding him also. I immediately let fly, without waiting till he was within

reach, and the report did but enrage him, for he now quickened his pace, and seemed to approach me full speed I attempted to escape, but that only added (if an addition could be made) to my distress; for the moment I turned about I found a large crocodile, with his mouth extended almost ready to receive me. On my right hand was the piece of water before mentioned, and on my left a deep precipice, said to have, as I have since learned, a receptacle at the bottom for venomous creatures; in short, I gave myself up as lost, for the lion was now upon his hind legs, just in the act of seizing me. I fell involuntarily to the ground with fear, and, as it afterwards appeared, he sprang over me. I lay some time in a situation which no language can describe, expecting to feel his teeth or talons in some part of me every moment After waiting in this prostrate situation a few seconds I heard a violent but unusual noise, different from any sound that had ever before assailed my ears; nor is it at all to be wondered at, when I inform you from whence it proceeded. After listening for some time, I ventured to raise my head and look round, when, to my unspeakable joy, I perceived the lion had, by the eagerness with which he sprung at me, jumped forward, as I fell, into the crocodile's mouth! which, as before observed, was wide open. The head of the one stuck in the throat of the other! and they were struggling to extricate themselves! I fortunately recollected my hunting-knife, which was by my side With this instrument I severed the lion's head at one blow, and the body fell at my feet! I then, with the butt end of my fowling-piece, rammed the head farther into the throat of the crocodile, and destroyed him by suffocation, for he could neither gorge nor eject it

Soon after I had thus gained a complete victory over my two powerful adversaries my companion arrived in search of me; for finding I did not follow him into the wood, he returned, apprehending I had lost my way or met with some accident

After mutual congratulations, we measured the crocodile, which was just forty feet in length.

As soon as we had related this extraordinary adventure to the governor, he sent a wagon and servants, who brought home the two carcasses The lion's skin was properly preserved, with its hair on, after which it was made into tobacco pouches, and presented by me, upon our return to Holland, to the burgomasters, who, in return, requested my acceptance of a thousand ducats.

SWALLOWED BY A FISH

I WAS once in great danger of being lost in a strange manner in the Mediterranean. I was bathing in that pleasant sea near Marseille one summer's afternoon, when I saw a very large fish, with his jaws open, coming towards me with the greatest speed; there was no time to be lost, nor could I possibly avoid him. I at once made myself as small a size as possible, by closing my feet and placing my hands near my sides, in which position I passed directly between his jaws, and into his stomach. Here I remained some time in total darkness, and comfortably warm, as you may imagine

At last it occurred to me that by giving him pain he would be glad to get rid of me Therefore as I had plenty of room, I played many pranks, such as tumbling, hop, step and jump, and so on, but nothing seemed to disturb him so much as the quick motion of my feet in attempting to dance a hornpipe. Soon after I began he leapt about by sudden fits and starts. I persevered, and at last he roared horribly, and stood almost upright in the water, with his head and shoulders exposed, by which he was discovered by the people on board an Italian trader then sailing by, who harpooned him in a few minutes.

As soon as he was brought on board I heard the crew consulting how they should cut him up, so as to preserve the greatest

quantity of oil. I understood their language, and was in great fear lest their weapons should destroy me also. I therefore stood as near the middle as possible, for there was room enough for a dozen men in this creature's stomach, and I naturally imagined they would begin with the ends of him. However, my fears were soon put to rest, for they began by opening the bottom of the belly.

As soon as I perceived a glimmering of light I called out lustily to be released from a situation in which I was now almost suffocated. It is impossible for me to describe the astonishment which sat upon every face at hearing a human voice issue from a fish, and even more so at seeing a man walk upright out of its body. I told them the whole story, while amazement struck them dumb.

After taking some food, and jumping into the sea to cleanse myself, I swam to my clothes, which lay where I had left them on the shore As near as I can judge, I was about four hours and a half confined in the stomach of this animal.

HOW TO TELL BAD NEWS TO A KING

FREDERICK the Great, king of Prussia, had a violent temper. Everyone was afraid of him, for one moment he would roar with laughter at a man and the next moment order him to be put to death

The king had a handsome horse which he loved with all his heart. The horse was fond of his master, too, and he would lay his head on his master's shoulder and whinny to show his love. One day the horse fell sick The king was very sad when he heard that his favourite was ill, and he ordered the horse doctors to do all that they could to make him better.

In spite of all that the doctors tried, however, the horse grew worse. Every day at twelve a servant went to the king to tell him how the horse was and each day he brought worse news, till at last the king shouted out in a rage, "If any man brings me news that my horse is dead, he shall be hanged."

All those who heard of this terrible threat trembled, and they trembled still more when one day the horse was found to be dead. What was to be done? No one would go to the king to tell him the bad news, for fear of being hanged. Yet he had to be told

Everyone was in despair, when a young officer in the king's army said, "Leave the matter to me. I will see that the king knows the news without anyone telling him"

At twelve o'clock he went to the king's room. "Well," said the king, "how is my horse?"

"Your majesty," said the officer, "the horse is in his usual place. He is lying down. He does not move. He does not eat. He does not drink. He does not sleep. He does not breathe. He does not——"

"Then," cried the king, "he must be dead."

"Your majesty has spoken truly," replied the officer, "and it is you who have told yourself the news."



STORIES OF OTHER LANDS

THE SAD END OF MR. CROW

AN Indian villager was one day obliged to go on a journey to a distant city, and left his wife behind him. The poor woman was very lonely without her husband, for she had no children to keep her company. She began to make a pet of a crow, which had built his nest in a tree beside her hut.

Every day the woman would set out a bowl of rice and milk for the bird, and sometimes some fresh fruit as well. The crow would fly down and eat the food, and while he ate the lonely woman would sit beside him and talk to him as if he were her child.

"Little crow," she would say, "my good man has been a long while gone. Do you think that evil has happened to him in the great city? Oh, little crow, I am so anxious. If only he may come home safely, I will give you a beautiful gold cap which will make you more handsome than a peacock."

All the attention which he received made the crow very proud. He fancied himself the greatest crow in all India. When the woman's husband came home he grew more conceited still, for she ran out of the hut calling, "Little crow, little crow, my man has come home. Here is the gold cap I promised you."

Down flew the crow, and the woman placed the shining cap on his black head In all India there was no prouder bird than he.

The husband and wife, too, were very proud of their pet. When the wife went down to the river with the other women to wash clothes she could talk of nothing else but the crow.

"He is just like a child to me," she would say, "and I know that he loves me as much as I love him."

In the evening, when the man went to sit under the village banyan tree to smoke his pipe with the other villagers, he was sure to have some new story to tell about his wife's wonderful crow.

In time the rest of the village folk, too, became proud of the bird. Whenever a stranger came to the village they would lead him to the tree which was the crow's home and show him the bird sitting proudly on a high branch, his golden cap shining in the sun. When he returned to his own village, the stranger would tell what he had seen, and in this way the fame of the crow spread far and wide.

At last two robbers heard of it, and made up their minds to steal the golden cap "Why waste precious gold on a bird?" said one.

"The cap shall be ours this very night," replied the other.

They waited till nightfall and then made their way quietly to the foot of the tree While one thief mounted guard below, the other climbed to the tree-top and seized the poor crow. He carried it down to the ground, and there the two robbers chopped off its gold-crowned head.

"Alas!" thought the poor crow, as he saw the knife falling, "if only I had remained a humble crow, I might have lived to a good old age; but the glory which I enjoyed for a little while has brought me to an early death."

THE FAITHFUL ELEPHANT

A CERTAIN rajah, or Indian prince, had among his fighting elephants one that was more courageous than all the rest. It was so brave that it always marched at the head of the Rajah's army, carrying his standard. The elephant had been so well trained by its mahout, or keeper, that it would stand still without

moving though the battle raged fiercely round it, and never stir from its place till its master gave the word.

The Indian soldiers, seeing their standard proudly borne by the splendid animal, never lost their courage, and, thanks to the noble elephant's bravery, the Rajah won battle after battle.

One day, however, the troops had to meet an army twice as large as their own. "Now, my beauty," said the mahout as he fastened on his great charger's battle harness, "you must stand firm to-day, for this will be such a battle as you have never seen before, and we shall need all our courage if we are to win"

The elephant threw up his trunk and trumpeted loudly, as if to say that he understood and promised to do his best.

At last all was ready, the war trumpets sounded and the army marched out to battle. As soon as they reached the enemy's lines the mahout gave the word to halt The great elephant stood still like a rock among the sea of angry men who fought around him. From his back streamed the Rajah's standard, and the Rajah's soldiers, seeing it, were encouraged to fight on.

A spear wounded the elephant, and then another and another, but he made no sound or movement Then another elephant dashed up and its driver thrust his spear into the mahout's body so that he fell to the ground and died Still the great elephant stood like a rock, waiting for the command to move.

All day long the battle raged. Once it seemed as if the enemy must win the day, and the weary soldiers of the Rajah broke and fled. Then the Rajah himself rode after them. "See," he cried, "the flag still flies."

The soldiers looked and took courage. They fell once more on the foe, and drove them back in one tremendous charge.

When night fell, the Rajah's troops had won the battle. They crowded round the faithful standard bearer who had brought them victory, and who still stood beside the dead body of his master. In vain they tried to lead him away. He was waiting for the command from his master's voice which he would never hear again

For a day and a night the great elephant stood there He would neither eat nor drink, and the other mahouts dared not come near him to dress his many wounds. The Rajah heard of it and came himself to see the faithful creature, but even his voice had no effect.

"Had the dead mahout a son?" asked the Rajah, suddenly.

"He had, Lord," replied a soldier, "but he lives more than a hundred miles hence."

"Send for him at once," cried the Rajah. So two swift horsemen were despatched to the mahout's far-off village home. There they found the mahout's little son, and, promising the widow that he should be well treated, they bore him away with them. Back to the battlefield they rode, where the weary elephant still stood waiting for his dead master's voice When he saw the boy coming toward him he gave a great blast of joy.

"Come, O faithful one," said the child, and the great elephant, his standard still flying, slowly followed his master's son. For three days and three nights he had stood where his master left him, but he knew his master's child, and allowed him to lead him away from the battlefield where his courage had won the victory

THE JACKAL AND THE LION

A FIERCE lion once lived in the jungle and terrified all the other beasts. At last a clever little jackal made up his mind that he would get rid of this terrible enemy As the jackal trotted along one day, thinking out what to do, he passed a well and, peering in, saw his own face looking up from the water below.

"Aha!" he said to himself, "now I have an idea," and he went straight to the lion's den

"Oh, my lord," said the jackal. "I have some bad news for you. Another lion has come to live in the forest, and he declares that he will kill you and become lord of the forest. To keep his plans secret, he lives at the bottom of a well"

The lion immediately flew into a rage. "Show me where he lives," he roared, "and I will soon put an end to his plans."

The jackal led him to the well and told him to look in. The lion did so, and saw in the water his own angry face and bristling mane. He thought he saw another lion there, and with a terrible roar he leaped into the well to fight him. The jackal at once called the other beasts, who rolled great stones into the well, and crushed their cruel enemy. From that time onwards they lived in peace in the forest.

THE OLD MAN AND THE SNAKE

A KING once had an old servant who had served him faithfully for many years. The king was very fond of the old man and paid him so much honour that the courtiers grew jealous. At last they went to the king and told him that the servant whom he thought so faithful was really a dangerous enemy. The king believed their wicked lie, and the old servant was sent away from the palace.

As he wandered along, not knowing where to go, he passed by a dry well, and heard a voice from it calling, "Help me out! help me out!" Looking into the well, he saw at the bottom a snake which had fallen in. "If you will take me out of this well," said the snake, "I will do you a kindness in return."

"How do I know that you will not bite me?" said the old man.

"I promise that I will do you no harm," replied the snake Then the old man climbed down into the well and brought the creature out.

"Now," said the grateful snake, "if ever you are in trouble, call me and I will come to you." With these words, he glided swiftly away.

After many weeks had passed, the old servant thought that the king would have forgotten his anger, and he went back to the palace. His enemies were waiting for him, however, and he was seized and thrown into prison. As he lay in his dark cell, he suddenly remembered the snake's words. "Oh, snake!" he called, "come and help me if you can."

At once the snake appeared beside him. "I will help you to escape from prison as you helped me out of the well," he said. He then whispered a clever plan to the old man, telling him exactly what to do. After this the snake went off to the royal stables where the elephants were kept. There he found the great elephant which was the king's favourite and crept up inside his trunk without being seen.

The elephant, feeling a snake in his trunk, began to plunge about so wildly that no one dared go near him. He could neither eat nor drink nor keep still. When the king heard that his favourite elephant was sick, he declared that if anyone could cure him he should be given a thousand gold pieces as a reward.

The old servant in his prison knew what was happening. "If I were only free," he said to his warder one day, "I could soon cure the king's elephant" The warder told the king, who commanded the prisoner to be set free and sent to the sick elephant.

The man went quietly up to the elephant and pretended to mutter magic words. When no one was looking he gently drew the snake out of the animal's trunk. As soon as the snake was gone, the elephant was cured. He began to eat grass and drink the water brought to him, and was soon quite well again

The king was delighted, and ordered the man who had cured his elephant to be brought before him. Lo and behold! It was his old servant! When he heard how badly he had been treated, the king was very

angry. He punished the jealous courtiers, paid the faithful servant his thousand gold coins and took him back into the palace once more, where he lived happily till he died

THE CORMORANT AND THE CRAB

A CORMORANT is a large, greedy sea bird. One of these birds once saw dozens of silvery fish swimming to and fro in a clear pool between some rocks. The cormorant was hungry He settled himself by the water's edge and waited, hoping to catch a fish for his supper. As soon as the fish saw the ugly great bird with his long black neck, they swam away in fear.

"I shall have to catch my supper by a trick," thought the cormorant. So he bent his head down sorrowfully over the water and wept bitterly The fish saw his tears splashing into the pool, and were curious to know why he was so sad. At last, they ventured nearer, and asked the cause of his sorrow.

"Alas, my friends," said the cormorant, "I am weeping because I know that you will all die a cruel death. There is to be no rain for twelve years, and all the pools will dry up Then the fish in them will die."

"This is terrible news," cried the fish. "What can we do to escape?"

"If you will trust me," replied the cormorant, "I can tell you of a way of saving yourselves"

"Tell us, tell us!" cried all the fish together.

"Some way from here," began the cormorant, "there is a deep pool which never dries up, however hot the weather may be. If you wish, I can carry you there in my beak one at a time, and you can live in safety till the twelve years are over"

The foolish fish trusted themselves to the wily bird, and each day he took one of them in his beak and set off for the pool. Alas! the poor fish never saw water again, for the cormorant flew with it to the top of a high rock and there he tore it to pieces and ate it.

At last he had eaten all the fish in the pond, and there was only a crab left. "I believe," said this crab to himself, "that the cormorant is an old rascal, and eats the fish whom he pretends to take to the new pool. I will punish him for his evil deeds." So he asked the cormorant to take him also to the deep pool. The bird took him up and carried him to the high rock. There, scattered all about, the crab saw fishes' heads and tails, and white fish bones, the remains of the cormorant's many feasts. "Aha!" said he, "it is as I thought." He stretched out his long pincers and gripped the cormorant's neck, nipping it tightly. Then very slowly the crab choked the cormorant to death.

THE CROW AND THE SNAKE

A CROW once built his nest in the highest tree of a forest. Now in the trunk of this tree was a hole where a huge snake lived This snake was a great trouble to the crow, for he would climb the tree and steal the baby crows out of their nest. The crow and his wife longed to be free from their wicked enemy.

One day the king of the country chanced to be hunting in the jungle. Feeling tired, he lay down to rest under the tree where the crow's nest was. He took off his golden collar so that his neck should be quite free and laid it beside him on the grass. Then he fell asleep. Now was the crow's chance. He flew down, picked up the collar and dropped it into the snake's hole.

When the king awoke, great was his distress to find his collar gone. "Search everywhere," he cried to his servants. "It cannot be far off"

One of the king's men thrust his stick into the snake's hole. Out came the snake and was quickly killed with big stones. Then the king's servants looked into the hole and found the collar. So that night

the king and the crow both slept soundly—the king because he had his collar once more, and the crow because he had rid himself of the cruel snake.

THE TORTOISE, THE EAGLES AND THE JACKAL

A TORTOISE once lived on the banks of a river. Near this river there stood a tall tree, in which two eagles had made their home. Every day the eagles would feast on the ripe fruit of a mango tree near by, and the tortoise would creep under the tree to eat the scraps which the eagles let fall.

In this way the eagles and the tortoise came to know each other, and soon became firm friends. After some time the eagles decided to fly to another place. The tortoise was distressed to hear that her friends were going away. "Take me with you," she begged

"How can we do that?" asked the eagles. "You walk on land or swim in water, while we fly in the air. How, then, can we travel together?"

"Surely you can think of some plan," said the tortoise. "Go with you I must, for I shall die of grief and hunger if you leave me behind."

At last the eagles found a stout stick. Each was to take one end of it in his claws, and the tortoise was to hold on with her teeth to the middle of the stick. "Now be careful," said the eagles, "that you do not say a single word while you are in the air"

The tortoise promised to obey, and took the stick in her teeth. The eagles seized the two ends, and rose in the air. They were soon flying swiftly along with the tortoise hanging between them.

As they sailed along a jackal saw them pass, and jumped up and down, barking wildly, to make the tortoise let go her hold. He shouted to the eagles, "It is right that you should travel through the air, my noble lords, but to have a foolish tortoise with you is a shame."

The eagles paid no heed to the rude little jackal, but the tortoise was very angry and opened her mouth to reply. In so doing, she let go the stick and fell down, landing upon soft damp ground near a river The jackal at once rushed up, meaning to eat her. The tortoise, however, drew her head and feet inside her shell and, try though he might, the jackal could not crack it.

"Your skin is very hard, Madame Tortoise," he grumbled, not knowing that she had a shell around her. The tortoise made up her mind not to be tricked again, and answered quietly, "Of course it is, for it became dried up as I travelled through the air. If you put me into the river, my skin will become soft again and you will easily be able to eat me."

The jackal, believing what she said, carried her to the river and put her into the water He kept his paw on her back, however, to prevent escape. After some time he said, "Isn't your skin soft enough yet?"

"Yes," replied the tortoise, "all except the part under your paw, which the water cannot reach. If you will take it away for a few minutes, that part will grow soft too and then you can eat me if you like."

The jackal took away his paw, and as soon as the tortoise felt herself free she dived under the water and came up again on the far side of the river. "Well, Mr. Jackal," she laughed, "who is the foolish one now?" Then off and away she swam to find her friends the eagles.

THE HOLY MAN, THE CROCODILE AND THE JACKAL

A HOLY man named Astika one day came to a river which had dried up because of the heat. On the river bank lay a crocodile, gasping and faint for lack of water. "Ah, have pity

on me," he cried, "and carry me to the river Ganges. There is plenty of water there, but if I stay here any longer I shall die."

The holy man felt sorry for the poor crocodile He put him into his bag, hoisted it on his back and set out for the river Ganges. When they reached it, Astika opened the bag and told the crocodile that he could now go down to the water

"Ah, put me into the water yourself," said the wily animal, "for I am so faint with thirst that I have no strength to drag myself to it" The holy man carried the bag to the river's edge, lifted out the crocodile and put him into the shallow water In a moment the ungrateful animal had seized him by the leg and was trying to drag him under.

"You villain," cried Astika, both frightened and angry, "is this your gratitude for my kindness to you?"

Just then a jackal passed by "Let us tell the jackal the whole story," said Astika, "and if he thinks that it is right for you to eat me, I will let you do so"

The jackal came up and listened quietly to the story which Astika told him Then he said gravely, "Before I tell you what I think, I should like to see how you managed the journey together" So the crocodile crawled back into the bag, the holy man tied it up and then showed the jackal how he had carried the crocodile in it on his back

Now that the crocodile was safe again in the bag, the jackal told the holy man to follow him with his load, and led him to a spot some distance from the river. "Now put down the bag," he said Then the jackal took a large stone, and with it he crushed the head of the crafty crocodile "You foolish man," he said to Astika, "don't you know that you should never make friends with the wicked?"

He then called all the other jackals and they feasted on the crocodile's body, while the holy man went back to his village thankful for his escape from death

THE MONKEY AND THE WEDGE

A NAUGHTY monkey was one day sitting in a tree with his friends, watching some carpenters at work below They were sawing up wood to be used in building a temple One of the carpenters began splitting a big log, but when the end of the day's work came the log was still only half split The carpenter put into the crack a piece of wood shaped like a wedge, thin at the bottom and growing thicker and thicker towards the top This wedge kept the two halves of the log apart, so that the crack remained open. Having done this, the carpenter went home.

"Now, I will show you some fun," said the monkey to his friends. "I will pull out the wedge, so that the split closes up, and the carpenter will have his work to do all over again." So saying, he swung himself down to the ground and all the other monkeys followed to see what he would do.

The meddlesome little fellow seized the wedge and pulled it out. Alas! the two sides of the log closed together so quickly that he had no time to take his paw away, and it was caught and crushed between them His friends could not help him and the poor monkey was held a prisoner, till the workmen came back next day and set him free.

THE GOAT, THE LION AND THE JACKAL

AN old goat was one day wandering in a forest when he came to the mouth of a great cave "What a fine place to lie in!" he thought, and looked inside There, stretched at his ease, lay a great lion. The goat was very frightened, but he was a wise old fellow, and thought, "If I run away, the lion will run after me and catch me. I had better face him boldly."

So he walked into the cave and went straight toward the lion, showing no signs of fear The lion was surprised. "What

animal is this," he wondered, "that comes up to me so boldly? All the other beasts run from me in fear, but this creature looks as if he means to attack me himself." Aloud he said, "Who are you, with your long beard?"

The goat drew himself up proudly "I am the chief of all the goats," he said. "As for my long beard, I have made a vow that I will not have it cut till I have eaten a hundred and one tigers, twenty-five elephants and ten lions. So far I have eaten the hundred and one tigers and the twenty-five elephants, and now I am looking for lions As soon as I have found them and eaten them as well, I shall be able to have my beard cut."

The goat's yellow eyes glared in the gloomy cave, and the lion trembled from head to foot. "This terrible animal wants to eat me as the first of his ten lions," he thought He leapt to his feet, and bounded out of the cave in terror.

As he ran, he met a jackal, looking like a lean, sly dog. "Why, my lord," cried he, "Why are you running so fast? You are quite out of breath. Whatever has caused the king of the beasts to flee from his home in this way?"

"O jackal," cried the lion, "a terrible creature came into my cave just now, looking for lions to eat. He had two twisted horns on his forehead and a long beard under his chin. I have never seen such a fearful animal"

"Why," cried the jackal, laughing, "the beast that frightened you must have been a goat, a poor, weak animal who can do you no harm. Come back to your den with me, and we will soon seize him and kill him Then you can eat him for your dinner"

The jackal and the lion went back to the cave. When the goat heard them coming, he said to himself, "I must use my wits again to help me to escape from this new danger" As the lion and the jackal drew near to the cave, the old goat went out to meet them. "How is this?" he said angrily to the jackal. "Is this the way you carry out my orders? I sent you to find ten lions for me to eat, and you bring me only one."

"Ah," thought the lion, "this jackal is the goat's servant. The goat sent him to bring me back by a trick so that he may eat me after all." He roared with fright, turned tail, and fled out of the forest. So the clever old goat, having twice escaped from danger, lived comfortably in the lion's cave for many years.

KE, KI AND KO

KE, Ki and Ko, were three little men made of indiarubber They lived in the land where the indiarubber trees grow, and where all the people are black. Ke, Ki and Ko were queer ugly little fellows. Ke had a very long nose. Ki had a very big mouth. Ko had only one eye, which was round and three times as large as those of other people.

Ke, Ki and Ko were bad little men whose greatest joy was to annoy other folk. They could give a little bounce and then a big bounce, and off they would go to the tops of the trees. They loved to poke the baby birds and steal eggs from the nests. They pulled the tails of the baby monkeys, and when the mother monkeys pushed them from the high branches, these bad little men bounced on the ground and were never hurt in the least.

When they were tired of annoying the birds and monkeys, they would go to the village and annoy the black people there They teased the black children and kept them from going to sleep. No sooner were the boys and girls put to bed than they would cry, "Ke is pulling my nose," or "Ki is biting my toes," or "Ko is making faces at me and I am afraid."

At last the black fathers and mothers went to the headman of the village and told him that Ke, Ki and Ko must be killed. So the headman crept at night to the cave where the bad little men slept

and cut off their heads with his knife. Then he went home again After he had gone the heads slowly joined themselves to the bodies again, and Ke, Ki and Ko jumped up in the morning as well as ever, and began their tricks once more.

After a time the fathers and mothers went again to the headman of the village. They were very angry and rolled their eyes and shouted all together that Ke, Ki and Ko must be killed "They worry the monkeys, they worry the birds, and they worry our children," cried the black people, "and you must put them to death"

"I have killed them already," said the headman "I cut off their heads with my knife"

"Then you must kill them again," cried everybody, "for they are still alive and vex us more than ever. This time you must see that they stay dead."

At midnight, the headman rose again and crept through the quiet forest. Every now and then a low hoot broke the silence. He followed the sounds. "Ahoo! ahoo!" it said, and there on a branch sat a wise witch owl.

The headman bowed to the ground. "I have come to ask your help, O wise witch owl," he said. "I wish to kill Ke, Ki and Ko, for they worry the birds, they worry the monkeys and they worry the babies in my village. How can this deed be done?"

"Only rubber men can kill rubber men," said the wise bird "You must cut off their heads and change them about Put the head of Big Nose Ke on the bed of Big Mouth Ki. Put the head of Big Mouth Ki on the bed of One Eye Ko. Put the head of One Eye Ko on the bed of Big Nose Ke, and all your troubles will be over."

The headman thanked the wise witch owl, and, going to the cave where the little men slept, he cut off their heads and changed them about as he had been told to do. The three heads joined up to the three bodies as before and in the morning the three little men jumped out of bed.

"Oho!" said Ke to Ko "What are you doing with my body?"

"Indeed!" said Ki to Ke. "Then tell me what you're doing with my body!"

"Listen to me!" cried Ko to Ki. "I want to know what you are doing with my body."

The three little men grew so angry that they sprang upon one another, and pulled and bit the whole day long. When evening came, the floor of the cave was covered with scraps of indiarubber. Ke, Ki and Ko were never seen again.

HOW A BABY CONQUERED A MAGICIAN

AMONG the Red Indians of America there once lived a magician named Glooskap. By his magic spells he had made himself master over the Indians and they all obeyed his will.

One day a woman came to visit Glooskap. "O mighty magician," she said, "you think that you are master of the whole world, and yet I know one person in it who will not obey you."

"Who is he? Where is he?" roared the magician.

"He is my baby," replied the woman, "and he is in my wigwam."

"Take me there at once," commanded Glooskap. So the woman took him to her home, and showed him the baby lying on his back in his birch-bark cradle, and sucking his thumb.

"Come here!" said Glooskap

"Goo-goo!" gurgled the baby, and began to play with its toes

"Come here!" shouted the magician again

The baby went on playing with its toes, and chuckling to itself.

"Come here!" roared the magician in a voice of thunder, furious that so small a creature should disobey his orders. He shouted so loudly that the baby was frightened and began to cry

"Boo-hoo!" it wailed, and the more the magician shouted the louder it cried

Glooskap tried all his magic spells, and his most horrible curses, but all in vain. Nothing could stop the baby's howling. At last, when he was quite worn out, Glooskap said to the woman, "You are quite right. Your baby is master over me. I am not so great as I thought myself," and he went home a sadder and a wiser man.

THE MIGHTY HUNTER

A LAZY Red Indian once wanted a wife, so he went to the daughter of a chief and asked her to marry him.

"Are you a mighty hunter?" asked the chief's daughter "I will marry no man who cannot hunt well."

"Indeed," said the Indian, "I am a very great hunter. Whenever I go into the forest the deer flee from me in terror, for they know that my arrows never miss their mark."

"You must prove your skill to me before I wed you," said the maiden, and she went inside the wigwam of her father.

Now the Indian was in reality a lazy fellow who never killed a deer if he could help it, but he took his bow and arrows and wandered into the forest. There he found a deer which had died. "This is just what I want," thought he to himself. He hoisted the deer on his shoulders and walked slowly past the maiden's wigwam.

She was sitting at the door, and saw him go by. "There goes my lover," she said to herself. "He has killed a deer already. That is good hunting."

When the hunter had passed the wigwam he went into the woods once more, and made his way round till he passed the wigwam again, still carrying the deer. "Why," thought the maiden, "there he goes again with another deer. He is a very fine hunter."

The Indian went through the woods a third time, and once more passed the wigwam "My lover is indeed a mighty hunter," cried the maiden; "I shall most certainly wed him"

The foolish hunter did not hear what she said, however, and he went round a fourth time. At this the maiden began to be suspicious. "I believe this is a trick," she said to herself. When he came past the fifth time, she cried out, "Why, it is the same deer which he has been carrying all the time. I do not believe that he even shot it himself."

When the mighty hunter came to the wigwam again to claim his bride, the girl met him with scornful words. "You foolish man," she cried, "if you had stopped after the third round I might have married you, but by the fifth I had found out the trick. Begone, or I shall call my father and he will shoot you for the cheat that you are!"

HOW TO DISCOVER A THIEF

SOME Negro farmers in Africa were worried by a thief, who crept into their fields at night and stole their corn. They set traps, and sat up watching, but could not catch him. They believed that it was a man of their own tribe who was robbing them.

At last they went to a wise woman and asked her advice. "Call together all the men of the tribe," she said, "and I will come and talk to them."

The Negroes gathered together in a hut, and when the wise woman entered, she gave each man a piece of straw.

"All these straws are of the same length," she said. "You must take them home with you and bring them back to-morrow. The straw belonging to the thief will have grown two inches longer in the night."

In the morning all the men of the tribe came to the witch-woman's hut, carrying their straws When she came to measure them, she found one straw two inches *shorter* than the rest.

"This is the thief," cried the wise woman, pointing to the man who held the short straw "He knew that he had robbed the cornfields, and so felt certain that his straw

would grow two inches in the night. So he cut off two inches to keep it the same length as the others"

The thief, thus cleverly caught, had nothing to say for himself, and was taken away to be punished.

THE LAZY JACKAL

ONE very hot summer the rivers and pools all dried up, and there was no water for the animals to drink.

"We must find water," they said, "or we shall all die."

After searching for many days, they found a small spring, but such a thin trickle of water came from it that there was not enough for all the animals who wished to drink

"The hole through which the water runs is too small," said the lion who was the chief of the animals. "Let us all set to work to dig and make it larger, so that more water may run out, and we can all quench our thirst."

The animals set to work, and dug with a will—all except the jackal He was lazy, and stood watching the other animals working their hardest, without offering to help them.

At last the hole was dug wide and deep and the spring water came pouring out, forming a deep clear pool The animals rushed to drink, the jackal among them.

"No," said the buck, "the jackal has done no work, therefore he must not drink"

"That is true," said the hare. "Who will prevent him from coming near the water?"

"I will keep watch," roared the lion, "and if he comes near the water I will eat him." Then the animals, having quenched their thirst, went about their business while the lion remained to guard the pool.

Now the jackal knew that the lion, although so fierce and strong, was not very clever He set his wits to work and soon hit on a plan for obtaining a drink. He came trotting up to the spring, but instead of trying to drink, he sat down and began to eat a piece of honeycomb which he carried in his jaws

"You need not trouble to guard the water, Mr. Lion," he said as he munched away. "I am not at all thirsty."

The lion watched him eating the honey and began to wish for some himself "Is the honey good?" he asked

"It is delicious," replied the jackal.

"Do give me some," begged the lion. So the jackal gave him a very small piece, just enough to taste.

"Oh, it is very good," said the lion, smacking his lips. "Do give me a larger piece, friend Jackal."

"Very well," said the jackal "Lie down on your back and I will pour it down your throat"

The lion lay down on his back, waving his great paws with delight at the thought of the treat in store

"I am afraid you will hurt me with those great paws of yours," said the jackal "Let me tie them up first, and then I can pour the honey into your mouth in safety"

"Very well," said the lion. So the jackal tied up the lion's four paws with four strong pieces of rope. "Now give me the honey," cried the lion.

The jackal only laughed at this, and, trotting to the spring, drank his fill of water

As he was running gaily off, the lion roared after him, "Mr Jackal, Mr. Jackal, don't leave me here helpless with my paws tied up! The other animals will laugh when they see me, and never do as I tell them again. If you will only untie me, I promise that you shall come as often as you like to the spring and drink as much water as you want."

The jackal thought to himself, "If I do not set him free, one of the other animals will do so, and then he will seek me out and kill me. I had better untie him and trust him to let me come to the water." Aloud he said, "Very well, I will set you

free, and I will trust you to keep your promise."

So the jackal untied the lion's paws and gave him some of the honey. Ever afterwards, when the animals came to drink, the lion ordered them to allow the jackal to drink as much and as often as he wished from the new spring which they had made.

BALDUR THE BRIGHT AND BOLD

(*Note* There are in the portfolio two Class Pictures to illustrate this story—No. 159, *Frigga calls the Animals*, and No 160, *Baldur the Bright and Bold* Descriptions of the pictures and exercises on them are given in the Reference Book)

PART I —THE DREAM

UPON a summer's afternoon it happened that Baldur the Bright and Bold, beloved of men and the Nobles of Asgard, found himself alone in his palace of Broadblink. A noon-day stillness pervaded the whole earth, and Baldur in Broadblink, the wide-glancing most sunlit of palaces, dreamed a dream.

Now the dream of Baldur was troubled He knew not whence nor why; but when he awoke he found that a most new and weighty care was within him It was so heavy that Baldur could scarcely carry it, and yet he pressed it closely to his heart, and said, "Lie there, and do not fall on any one but me." Then he rose up and walked out from the expanded splendour of his hall that he might seek his own mother, Frigga, and tell her what had happened to him. He found her in her crystal saloon, calm and kind, waiting to listen, and ready to sympathise; so he walked up to her, his hands pressed closely on his heart, and lay down at her feet sighing.

"What is the matter, dear Baldur?" asked Frigga, gently.

"I do not know, mother," answered he. "I do not know what the matter is, but I have a shadow in my heart."

"Take it out, then, my son, and let me look at it," replied Frigga.

"But I fear, mother, that if I do it will cover the whole earth "

Then Frigga laid her hand upon the heart of her son that she might feel the shadow's shape Her brow became clouded as she felt it; her parted lips grew pale, and she cried out, "Oh! Baldur, my beloved son! The shadow is the shadow of death!"

Then said Baldur, "I will die bravely, my mother "

But Frigga answered, "You shall not die at all; for I will not sleep to-night until everything on earth has sworn to me that it will neither kill nor harm you "

So Frigga stood up and called to her everything on earth that had power to hurt or slay. First she called all metals to her, and heavy iron-ore came lumbering up the hill into the crystal hall, brass and gold, copper, silver, lead and steel, and stood before the Queen, who lifted her right hand high in the air, saying, "Swear to me that you will not injure Baldur," and they all swore, and went

Then she called to her all stones, and huge granite came with crumbling sand-stone, and white lime, and the round, smooth stones of the sea-shore, and Frigga raised her arm, saying, "Swear that you will not injure Baldur;" and they swore, and went

Then Frigga called to her the trees; and wide-spreading oak trees, with tall ash and sombre firs came rushing up the hill, with long branches, from which green leaves like flags were waving, and Frigga raised her hand, and said, "Swear that you will not hurt Baldur;" and they said, "We swear," and went.

After this Frigga called to her the diseases, who came blown thitherward by poisonous winds on wings of pain, and to the sound of moaning. Frigga said to them, "Swear;" and they sighed, "We swear," then flew away. Then Frigga called to her all beasts, birds, and venomous snakes, who came to her and swore, and disappeared. After this she stretched out her hand to Baldur, whilst a

smile spread over her face, saying, "And now, my son, you cannot die"

Just then Father Odin came in, and when he heard the whole story, he looked even more sad than she had done. Neither did the cloud pass from his face, when he was told of the oaths that had been taken.

"Why do you look so grave, my lord?" asked Frigga. "Baldur cannot now die."

But Odin asked, "Is the shadow gone out of our son's heart, or is it still there?"

"It cannot be there," said Frigga

Odin looked at Baldur and saw how it was with him. Then he saddled his eight-footed steed, mounted him, and turning to Frigga said, "I know of a prophetess who, when she was alive, could tell what was going to happen. I am going to her grave to awaken her, and ask whether any terrible grief is really coming to us"

So saying Odin shook the bridle in his hand and his steed leapt forth and rushed like a whirlwind down the mountain

PART II—THE PEACESTEAD

Not long after this, Loki the Evil One was passing by the Peacestead, a broad green plain where the gods held their sports and trials of skill. Loki found that the Nobles were standing round in a circle shooting at something, and he peeped between the shoulders of two of them to find out what it was To his surprise he saw Baldur standing in the midst, erect and calm, whilst his friends and brothers were aiming their weapons at him. Some hewed at him with their swords—others threw stones at him—some shot arrows pointed with steel.

"Well," said Loki to himself, "if this is the sport of Asgard, I wonder what Father Odin and Mother Frigga would say if they were here?" But as Loki still looked, he became even more surprised, for the sport went on, and Baldur was not hurt Arrows aimed at his very heart glanced back again untinged with blood. The stones fell down from his broad bright brow, and left no bruises there. Swords clave, but did not wound him.

At this Loki grew perfectly furious with envy and hatred "And why is Baldur to be so honoured," said he, "that even steel and stone shall not hurt him?" Then Loki changed himself into a little, dark, bent, old woman, with a stick in his hand, and hobbled away from the Peacestead to Frigga's cool hall. At the door he knocked with his stick.

"Come in!" said the kind voice of Frigga, and Loki lifted the latch.

Now when Frigga saw from the other end of the hall a little, bent, crippled, old woman, come hobbling up her crystal floor, she got up with true queenliness, and met her half-way, holding out her hand, and saying in the kindest manner, "Pray sit down, my poor old friend; for it seems to me that you have come from a great way off."

"That I have, indeed," answered Loki in a tremulous, squeaking voice.

"And did you happen to see anything of the Nobles," asked Frigga, "as you came?"

"Just now I passed by the Peacestead, and saw them at play."

"What were they doing?"

"Shooting at Baldur."

Then Frigga bent over her work with a pleased smile on her face. "And nothing hurt him?" she said.

"Nothing," answered Loki, looking keenly at her

"No, nothing," murmured Frigga, still looking down and speaking half musingly to herself, "for all things have sworn to me that they will not"

"Sworn!" exclaimed Loki, eagerly; "what is that you say? Has everything sworn then?"

"Everything," answered she, "excepting, indeed, the little shrub mistletoe, which grows, you know, on the west side of Valhalla, and to which I said nothing, because I thought it was too young to swear"

"Excellent!" thought Loki, and then he got up

"You're not going yet, are you?" said Frigga, stretching out her hand and looking up at last into the eyes of the old woman.

"I'm quite rested now, thank you," answered Loki in his squeaky voice, and then he hobbled out of the door, which clapped after him, and sent a cold gust into the room. Frigga shuddered, and thought that a serpent was gliding down the back of her neck.

When Loki had left the presence of Frigga, he changed himself back to his proper shape, and went straight to the west side of Valhalla, where the mistletoe grew. Then he opened his knife, and cut off a large branch, saying these words, "Too young for Frigga's oaths, but not too weak for Loki's work"

After which he set off for the Peacestead once more, the mistletoe in his hand When he got there he found that the Nobles were still at their sport, standing round taking aim, and talking eagerly, and Baldur did not seem tired

But there was one who stood alone, leaning against a tree, and took no part in what was going on. This was Hodur, Baldur's blind twin-brother; he stood with his head bent downwards, silent, whilst the others were speaking, doing nothing when they were most eager, and Loki thought that there was a discontented expression on his face, just as if he were saying to himself, "Nobody takes any notice of me." So Loki went up to him, and put his hand upon his shoulder.

"And why are you standing here all alone, my brave friend?" said he "Why don't *you* throw something at Baldur? Hew at him with a sword, or show him some attention of that sort"

"I haven't got a sword," answered Hödur, with an impatient gesture, "and you know as well as I do, Loki, that Father Odin does not approve of my wearing warlike weapons, or joining in sham fights, because I am blind."

"Oh! is that it?" said Loki. "Well, I only know *I* shouldn't like to be left out of everything. However, I've got a twig of mistletoe here which I'll lend you if you like; a harmless little twig enough, but I shall be happy to guide your arm if you would like to throw it, and Baldur might take it as a compliment from his twin-brother."

"Let me feel it," said Hodur, stretching out his uncertain hands

"This way, this way, my dear friend," said Loki, giving him the twig "Now, as hard as ever you can, to do *him honour*; throw!"

Hodur threw—Baldur fell, and the shadow of death covered the whole earth

Questions to follow the Story-Telling.—*Part I* At what time of day did Baldur dream his dream? Who were very fond of him? What was the name of his palace? Why was Baldur sad when he woke from his sleep? Whom did he go to see? What was his mother's name? What did Baldur tell his mother? What did she tell Baldur to do? Why did Frigga look pale when she laid her hand upon the heart of her son? How did Baldur show that he was a brave fellow? What did Frigga first call to her? What were the names of some of the metals? What did Frigga say to them? What did she call after the metals? What sort of stones came to her? What were called after the stones? What were the last things that were called?

NATURE STORIES

CAT AND SQUIRREL

THERE was once a poor cat whose kittens had all died, leaving her very sad So the gamekeeper brought from the wood a tiny baby squirrel whose eyes were not yet open, and who could neither eat nor drink alone The children laid the helpless little creature by the cat and she gave him her milk to drink and licked him as if he were her own baby She kept him warm by night, and if a dog

came near who might hurt her foster-child she would put up her back, bristle her coat and fly at the enemy till he ran away.

But when the squirrel grew bigger and could run about alone, pussy took him for walks, showed him all about the house, and gave him lessons in the art of catching mice First she laid a dead mouse before him and instructed him how he should catch hold of it Then she brought a half dead one, which could still run a little, and Master Squirrel was to catch it At last she brought a quite live one, let it run away and caught it again. All this her foster-child was to imitate, that he might learn to get his own mice and shift for himself in the world.

But the squirrel took very little notice of pussy's lessons, for he cared neither to catch nor eat a mouse He could not even learn to talk in cat language, and if pussy called "miau," he answered "mrr" in squirrel talk. The cat did her very best for him, but it was all no use. She was very troubled, thinking, I expect, "What is to become of such a useless child? How is he to get on in the world? How is he to get his living?"

She led the way into the garden, and her squirrel son hopped beside her, till they came to the nut tree, beneath which the mice had a hole Here the lesson in mouse catching was to begin again But the squirrel had hardly set eyes on the lovely tree before he had shot up the trunk From among the rustling branches he looked down upon his foster-mother. Pussy could climb, too, for she had been up the nut tree before now, stalking sparrows So she took a run at it and clawed her way up the trunk. Hardly had she reached Master Squirrel than he jumped from one branch to another right up into the thinnest branches in the crown. From there he peeped merrily down upon the world, picked a nut hanging beside him, cracked it, ate up the sweet kernel and threw the shell down to mother cat.

That was more than puss could understand She climbed down again from the tree, and thought the matter over By and by the two lived happily together in the garden, each one took care of itself and went its own way The cat crept after the mice below, caught them and ate them, while the squirrel rocked high up among the branches and munched nuts We each have our own lives to live, and everyone must make the best of the gifts he has.

THE BLINDWORM

THE blindworm, or slowworm, is a gentle little creature who never hurts anyone, who lives on little worms and slugs, and is happy when the sun shines upon her During the winter she creeps into a hole in the forest with other blindworms, rolls herself up into a ball, and sleeps as long as the cold weather lasts. She needs no food all this time, which is very convenient for her, for she waits till the spring sunshine has tempted the worms to come out of the ground, before she seeks her meal of an evening, and one long worm suffices to satisfy her hunger for a whole day.

You may safely take her up in your hand and stroke her, but you must be most gentle in doing so, or she is so startled that she breaks in two pieces. The lower, or tail part, wriggles up and down awhile as if it were a separate animal, but the front part winds away to hide among moss and stones, and in a few weeks a new tail has grown on to it.

The blindworm has one great misfortune, and that is her likeness to a snake. She is not a snake, or even related to one, but is cousin to the lizard. Her body is as long and slender as an adder's, she has no legs and is covered with scales, and her head, too, is very much like that of a snake. She has small teeth in her mouth, but she never bites anyone with them, and is most certainly not poisonous, but, like a snake, she puts out her forked tongue when she wishes to touch a strange object So it happens that many people mistake the poor blindworm for a poisonous snake, and, being afraid of her, they beat her to death if they find her

THE SPIDER

ONCE upon a time there was a little spider, who came from out of the garden into a room, and hid behind a cupboard. There she sat all day in a corner and no one noticed her, but when it was dark and the people were asleep, she came out and began to spin a web on the wall. She had four big eyes and four little ones, and with these she could see as well by night as she could by day. She needed neither candle nor lamp to work by.

In her body she had spinning glands, and from them she spun thin threads, drew them this way and that and made a fine web of them. In it she meant to catch the flies that are so troublesome to people, and gnats that bite and worry children. With her eight legs she wove the threads into each other, putting little sticky knots upon them, and on these the flies and gnats were to stick with their wings as they flew by. Finally she wove at the end of the web, sheltered in the corner of the room, a little tube-shaped house for herself. In this she sat, looking out of the opening as if it were a window

When morning came with bright daylight all was ready. She had worked very hard, and was as happy and as proud of her work as ever a spider could be. She had built her house well, and it was all neat and proper.

And now you might suppose that people took a delight in this industrious little spider, and admired the beautiful net which was to catch the tiresome flies. But you will see

When the mother came into the room with her child, and saw the spider's big web and the spider, she took a broom, swept them off the wall, and threw them into the yard

"That spider had worked hard," she said, "and did more in this one night than many a man works in a week, but it did its clever work in the wrong place. It should spin its web in the yard or the garden, but not in the room Do your work well, and do it where it is wanted"

THE SPONGE

THE sponge is a right good fellow, so gentle and soft, and such a help to a child in his washing.

In the days when you were very little, the sponge lived down at the very bottom of the deep blue sea. He was a very wonderful little creature, because he had no legs, and yet he could stand, for he grew on a stone. He had neither eyes nor ears, neither arms nor hands, and yet God knew how to feed him For he had not *one* mouth, but many hundreds of mouths, and with these he swallowed the salt water All day and all night he drank it in and spluttered it out again, and that was all he had to do.

From the minute animals in the sea-water the sponge built up hundreds of fine cells and fibres, arranged round many tubes, so that they could swallow the water quickly. The little cells grew together like a delicate web.

When the sponge had grown big enough, there came a fisherman in his boat, carrying a long pole with a fork at the end of it. With this he hooked the sponge and drew him up from the bottom of the sea. On shore he washed him well, and dried him in the sun

When the sponge had been well cleaned himself he was fit to wash others, kings and queens, lords and ladies, and you children, too.

A SWAN AND A PIKE

THERE once lived in a pond a swan and a pike, and both were wicked tyrants—one under the water and one on the top

The pike was a great, strong fish, longer and thicker than a man's arm, with a grey-green back and dark stripes and a silver body, and like a knight of old he was covered all over with a coat of mail of thick scales. But the most terrible thing about him was his huge mouth, furnished with long spikes

and teeth as sharp as knives, and woe to the little fish that once came between those jaws! For many years he had led a life of highway robbery in that pond. If young fishes found their way into it, carps and tenches, he never rested in his hunt for them, gobbled up one after the other, however much they wriggled or tried to defend themselves, and frightened any that escaped from pillar to post, till, in their terror, they never knew where to hide or how to escape from him. When the poor frogs wished to have their evening concert among the red, flowering rushes, and the eldest among them was just giving the keynote, the great pike pushed his way from below, and, before the singer knew what he was about, he had disappeared down the throat of the big fish, while the other frogs scattered in all directions. When mother duck came swimming along, proud of her fine family of yellow ducklings paddling around her, up came the pike, grabbed one of them by the leg, and disappeared with him under the water.

The swan was just as unmannerly on the top of the pond. Although his coat was as white as innocence itself, although he sailed along in all his beauty with his lovely bowed neck and half-spread wings, his manners were disgraceful If a little fish came to the water's surface to take a glimpse at daylight, the swan seized him and swallowed him If the ducks and geese contemplated a water picnic on the pond, he flew amongst them in fury, and scattered them with blows of his beak. With his strong wings he even attacked a little harmless child, who had brought its bread and butter to share it with this cruel swan.

And so the swan was gliding upon the surface of the pond one day, boasting that he alone was master there, while down below the pike was steering his way along and thinking just the same thing about himself. He looked up and the swan looked down into the depth, and the anger of each rose to fury against the other. With his beak the swan dived into the water after the fish, as deep as his long neck would allow him. The pike opened his great mouth as wide as he could, for he thought to have got as large a bite as ever he had dreamed of, and the swan's head went right into it. The pike's jaws closed, and he tried to swallow his catch, and so it came to pass that the swan was drowned, and the pike was choked by his too great mouthful. Both came to an untimely end, and were dragged to shore.

And what is the moral of this story? You should live at peace with your neighbour, and never take a bigger mouthful than you can swallow

THE HARVEST MOUSE

YOU all know how small the common mouse is, but her near neighbour the harvest mouse is still smaller, with a body no longer than a child's thumb and a thin tail about the length of a long finger.

Though the harvest mouse is tiny, yet she knows well how to get on in the world, and understands many tricks that would puzzle even a clever tumbler, running and jumping as quick as lightning, twisting and turning about so nimbly that it is a joy to watch her. In summer she carries on her happy games in the meadow or the wheat field, where she burrows a long passage underground to hide in if the cat comes prowling round or a hawk hovers overhead. When the danger has passed, she reappears, and catches a grub here, or nibbles a grain of corn there, just like any sparrow. She climbs up a rocking wheat stalk with the ease of a tight-rope dancer, swaying hither and thither by her own weight, and when she reaches the top she falls to and plunders the ripe ear, holding on meanwhile with her tail, as the monkeys do in hot countries when they wrap their tails round the branches of trees Other mice provide a little house for their young down in the ground, lined with moss and grass, but the harvest mouse imitates the birds, and builds a nest like

the reed-warbler's up amongst the corn-stalks. She carries up leaves and fibres and weaves them skilfully in with blades of grass, and so, with immense industry, she fashions for herself a little, ball-shaped house, which looks like a bundle of faded grass on the outside, but is neat and smooth and soft within. At one side is a small hole, which is the door When a heavy rainfall puts the young field mice hidden underground in great danger, and even drowns many of them, the young of the harvest mouse lie securely tucked up in their little house above, with the wind to rock them and, later, the sunshine to warm them.

When autumn brings the harvesters with their sickles and scythes, the little mouse escapes underground with her children, for they have grown up by that time, and learnt to run about as cleverly as their parents.

The farmer carries the corn-sheaves to the barn, or builds a mighty stack in the field itself, to be borne away later when there is room inside. The harvest mouse, left behind on the stubble field, finds little to comfort her, so she secretly follows the cart load, and slips into the barn or into the stack in the field. When winter winds whistle and the storm rages, covering the earth with snow, she nestles cosily in the warm straw, and finds food enough for her little teeth to gnaw, till, presently, the spring sunshine thaws the hard ground, the seed is sown, and the insects awake from their winter sleep.

So the tiny harvest mouse can teach us that it does not depend upon the size of your body whether you will do well in the world, but upon your wits and understanding.

DOG AND GOOSE

A CANADIAN goose, kept at East Barnet, in Hertfordshire, a few years ago, was observed to attach itself in the strongest and most affectionate manner to the house dog, but never presumed to go into the kennel except in rainy weather; whenever the dog barked, the goose would cackle, and run at the person she supposed the dog barked at, and try to bite him by the heels. Sometimes she would attempt to feed with the dog; but this the dog, who treated his faithful companion with indifference, would not suffer. This bird would not go to roost with the others at night, unless driven by main force; and when in the morning they were turned into the field, she would never stir from the yard gate, but sit there the whole day in sight of the dog. At length orders were given that she should no longer be molested; being thus left to herself, she ran about the yard with him all night, and what is particularly remarkable, whenever the dog went out of the yard and ran into the village, the goose always accompanied him, contriving to keep up with him by the assistance of her wings, and in this way of running and flying, followed him all over the parish. This extraordinary affection of the goose towards the dog, which continued till his death, two years after it was first observed, is supposed to have originated in his having saved her from a fox, in the very moment of distress.

While the dog was ill, the goose never quitted him, day or night, not even to feed; and it was apprehended that she would have been starved to death, had not a pan of corn been set every day close to the kennel. At this time, the goose generally sat in the kennel, and would not suffer any one to approach it, except the person who brought the dog's, or her own food. The end of this faithful bird was melancholy; for when the dog died, she would still keep possession of the kennel; and a new house dog being introduced, which in size and colour resembled that lately lost, the poor goose was unhappily deceived, and going into the kennel as usual, the new inhabitant seized her by the throat and killed her.

THE TORTOISE

IT was during the ensuing week, and while the Robin was in his blithest mood, and singing away undisturbed by megrims of any kind, but rejoicing in the comforts of each day as it came, that the Tortoise once more accosted him

When Robin first heard his voice he was startled, and feared another scolding, but he was quite mistaken. The old Tortoise was sitting by the side of an opening in the ground, which he had scratched out very cleverly with his claws It was in a corner among some stones which had lain there for years, and one large one in particular overhung the entrance of the hole he had dug. The wind had drifted a vast quantity of leaves in that direction, and some of them had been blown even into the hole itself, so that it looked like a warm underground bed.

"Hop down to me, little bird," was the Tortoise's address, in a quite friendly voice; an order with which the Robin at once complied "Ah, you need not be afraid," continued he, as the Robin alighted by his side. "I am quite happy now. See what a comfortable place I have made myself here in the earth There, there, put your head in and peep Did you ever see anything so snug in your life?"

The Robin peered in with his sharp little eye, and really admired the Tortoise's ingenious labour very much.

"Hop in," cried the Tortoise gaily, "there's room enough and to spare, is there not?"

Robin hopped in, and looked round. He was surprised at the size and convenience of the place, and admitted that a more roomy and comfortable winter's bed could not be wished for.

"Who wouldn't go to sleep?" cried the Tortoise; "what say you, my little friend? But you need not say, I see it in your eye You are not for sleep yourself. Well, well, we have all our different ways of life, and yours is a pleasant folly, after all, when it doesn't disturb other people And you won't disturb me any more this year, for I have made my arrangements at last, and shall soon be so sound asleep that I shall hear no more of your singing for the present. It's a nice bed, eh? isn't it? Not so nice, perhaps, as the warm sands of my native land; but the ground, even here, is much warmer inside than people think, who know nothing of it but the cold damp surface. Ah, if it wasn't, how would the snowdrop and crocus live through the winter? Well, I called you here to say good-bye, and show you where I am, and to ask you to remember me in the spring, if—that is, of course!—you survive the terrible weather that is coming. You don't mind my having been somewhat cross the other day, do you? I am apt to get testy now and then, and you disturbed me in my nap, which nobody can bear. But you will forgive and forget, won't you, little bird?"

The kind-hearted Robin protested his affectionate feeling in a thousand pretty ways

"Then you won't forget me in the spring," added the Tortoise; "but come here and sit on the laurel bush, and sing me awake. Not till the days are mild, and the plants get juicy, of course, but as soon as you please then. And now, good-bye. There's a strange feeling in the air to-day, and before many hours are over there will be snow and frost. Yours is a pleasant folly. I wish it may not cost you dear. Good-bye"

Hereupon the old Tortoise huddled away into the interior of his hole, where he actually disappeared from sight, and as, soon afterwards, the drifting leaves completely choked up the entrance of the place, no one could have suspected what was there but those who knew the secret beforehand.

THE TAME BAT

I WAS much entertained last summer with a tame bat, which would take flies out of a person's hand If you gave it anything to eat, it brought its wings round before the mouth, hovering and hiding

its head in the manner of birds of prey when they feed. The adroitness it showed in shearing off the wings of the flies, which were always rejected, was worthy of observation, and pleased me much Insects seem to be most acceptable, though it did not refuse raw flesh when offered: so that the notion that bats go down chimneys and gnaw men's bacon, seems no improbable story. While I amused myself with this wonderful quadruped, I saw it several times confute the vulgar opinion, that bats when down on a flat surface cannot get on the wing again, by rising with great ease from the floor. It ran, I observed, with more dispatch than I was aware of; but in a most ridiculous and grotesque manner.

Bats drink on the wing, like swallows, by sipping the surface, as they play over the pools and streams. They love to frequent waters, not only for the sake of drinking, but on account of insects, which are found over them in the greatest plenty.

HEDGEHOGS

HEDGEHOGS abound in my garden and fields. The manner in which they eat their roots of the plantain in my grasswalks is very curious· with their upper mandible, which is much longer than their lower, they bore under the plant, and so eat the root off upwards, leaving the tuft of leaves untouched In this respect they are serviceable, as they destroy a very troublesome weed; but they deface the walks in some measure by digging little round holes It appears, by the dung that they drop upon the turf, that beetles are no inconsiderable part of their food. In June last I procured a litter of four or five young hedgehogs, which appeared to be about five or six days old; they, I find, like puppies, are born blind, and could not see when they came to my hands. No doubt their spines are soft and flexible at the time of their birth. but it is plain that they soon harden, for these little pigs had such stiff prickles on their backs and sides as would easily have fetched blood, had they not been handled with caution. Their spines are quite white at this age; and they have little hanging ears, which I do not remember to be discernible in the old ones. They can, in part, at this age draw their skin down over their face; but are not able to contract themselves into a ball as they do, for the sake of defence, when full grown. The reason, I suppose, is because the curious muscle that enables the creature to roll itself up into a ball was not then arrived at its full tone and firmness. Hedgehogs make a deep and warm nest with leaves and moss, in which they conceal themselves for the winter: but I never could find that they stored in any winter provision, as some quadrupeds certainly do.

STORIES OF ANCIENT GREECE

INTRODUCTION

MANY stories of Ancient Greece are bound up with mythology and religion, and it will probably be helpful to the teacher if we give here a brief account of some of the gods. The Greeks and Romans worshipped similar gods, and the Roman names corresponding to the Greek names used here will be found in the table at the end.

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Zeus.—In the beginning of time, so the Greeks believed, Sky and Earth took their forms out of a chaos of immeasurable space, and Sky was ordained the first sovereign

of the universe. Sky took Earth to wife and by their marriage founded a huge family of strange, mighty beings, among whom were twelve giant Titans, three Cyclopes with only one eye apiece, and three brothers who each possessed a hundred hands and fifty heads. The youngest of this strange family was named Cronos; he rose in rebellion against his father Sky, deposed him with the help of his brothers the Titans, and made himself ruler of heaven in his father's stead

But Cronos sat uneasily on his ill-gotten throne, for he was warned that, just as he had usurped it from his father, so should he be deposed by his own son. To avoid that calamity Cronos made a practice of swallowing his children as soon as they were born. He disposed of five children in this way, causing his wife, Rhea, great distress at his unnatural behaviour. When her sixth child, Zeus, was born, she handed the baby over to the care of certain warriors called Curetes, then, wrapping a stone in the child's swaddling clothes, she offered it to her husband. Cronos unsuspectingly swallowed the stone, while the Curetes drowned the cries of the child by dancing round him beating their shields with their swords. Zeus was safely smuggled off to Crete, and brought up by the Curetes. The illustration, the *Birth of Zeus*, is part of a wall decoration, and shows the infant Zeus on the ground (identified by a tiny thunderbolt behind him) surrounded by the dancing Curetes The Curetes wear crestless helmets, cuirasses with short chitons under them, cloaks fastened round their necks, and greaves.

When Zeus grew to manhood he fulfilled the prophecy by returning to Greece to dethrone his father, also forcing him to disgorge his brothers and sisters along with the stone which represented himself. Zeus, supported by the Cyclopes and other mighty beings, then established himself overlord of the gods. They are pictured as dwelling together on the summit of mount Olympus, a high snow-capped mountain in Thessaly, their palaces shut in from the view of men on earth by a wall of clouds, the gates of which were kept by the Hours.

The reign of Zeus was soon disturbed by civil war, for the Titans rose against him on behalf of their father, Cronos They attempted to scale the heights of Olympus by piling mountains one upon the other, while Zeus and his followers plied them with thunderbolts. After a conflict lasting ten years the Titans were subdued and driven into confinement, and the reign of Zeus was established. He divided the universe, giving the underworld to his eldest brother Pluto, the sea to his other brother Poseidon, while the earth remained under the joint power of the three He himself, with Hera his



Terracotta relief in the British Museum.]

THE BIRTH OF ZEUS

At the birth of Zeus the Curetes danced beating their shields with their swords that the noise might drown the baby's cries, as it was feared he might suffer the same fate as the others of Rhea's children Zeus is identified by the tiny thunderbolt beside him.

wife, ruled the sky, and the two became the chief deities of Greek mythology, and were known as the king and queen of heaven.

Zeus was the father of gods and men, the supreme ruler of all All the gods repaired to his palace to take counsel and to settle the affairs of men. As king of the sky Zeus wielded the lightning and thunderbolts, produced the thunder, and regulated the whole course of nature; he is often styled "The Thunderer." Occasionally he left his palace on Mount Olympus to visit the earth on errands of justice or enquiry A pleasing story of one of his earthly visits is that of Baucis and Philemon, two humble peasants who entertained him and his son Mercury unawares, and were greatly rewarded.

Zeus usually figures in art as a magnificent bearded form, sometimes crowned with oak leaves and holding in his hands the thunderbolts with which he punished evildoers. An eagle, a snake and a beautiful cupbearer named Ganymede, are often represented in attendance upon him. The noblest representation of Zeus was the famous ivory and gold statue by Pheidias, which stood in the rich temple in the shade of Mount Olympus, and was included among the seven wonders of the ancient world.

The following is a table of the principal Greek gods, with their Roman equivalents:—

Cronos, father of Zeus. (Saturn.)
Zeus, king of heaven. (Jupiter.)
Hera, queen of heaven. (Juno.)
Pluto, god of the underworld. (Pluto.)
Poseidon, god of the sea. (Neptune.)
Athena, goddess of wisdom, daughter of Zeus. (Minerva.)
Demeter, goddess of the fruits of the earth. (Ceres.)

Athena.—The goddess Athena belonged to the younger generation of Olympians, who were the children of Zeus. She was the favourite daughter of this king of the gods, and it was said that she sprang, full grown and armed, from her father's head, startling all heaven with her battle-cry.

In spite, however, of this warlike first appearance, Athena was especially renowned as the goddess of wisdom and the patroness of the arts of peace, rather than of war. She presided over spinning and weaving and agriculture, and took a great interest in all cities, particularly in the city of Athens, which bore her name The story of how Athena came to be the patron goddess of Athens is told as follows.—

In one of her periodical visits to earth, the goddess came upon a little fishing village on the south-east coast of Greece under the shadow of a hill which commanded a wonderful view out to sea. "Build me a temple on this hill," said the goddess to its inhabitants, "and I will be your protector for ever." They gladly agreed, and worked with a will till the temple was complete.

But its building had aroused the jealousy



On a vase painted by Amasis]

ATHENA AND POSEIDON

Athena, in crested helmet, holds a spear, and Poseidon a trident.

of Poseidon, the sea-god. "It was I," he cried, "who brought the ships safely to shore laden with stones and marble for the temple. It is I, therefore, who have the right to name the city and to become its protecting deity."

The dispute was referred to Zeus, who gave judgment that the city should be named after whichever of the two claimants gave the most precious gift to its inhabitants. Poseidon with his trident struck the sea, and there leaped from the waves the first horse, a steed so beautiful that all stood lost in wonder Then Athena stepped forward and touched a blade of grass. At the magic touch the blade became an olive tree, which would yield the precious oil to be used for food, for fuel in lamps, and for bathing weary limbs after exercise or warfare. "More precious is the olive than the horse," said Zeus, and gave the city to Athena, who named it Athens.



Marble statue in the Villa Albani]

ATHENA

The bronze original, from which this is copied, is generally assigned to the time of Pheidias Over her shoulders Athena wears the aegis, or goat's skin, fringed with snakes, and with the Gorgon's head in the centre In place of a helmet she wears a dog's skin

The people of Athens rejoiced, dedicating the temple they had built on the Acropolis to Athena Parthenos (Athena the virgin), whence came its name the *Parthenon.* Destroyed by the Persians, the Parthenon was rebuilt in the age of Pericles under the direction of Pheidias, the same great sculptor who made the statue of Zeus at Olympia Only a small part of this beautiful building survives, in the shape of fragments of its frieze now in the British Museum, but they serve to show what the perfection of its details must have been

The great statue of Athena in the Parthenon, made like that of Zeus in ivory and gold, was another of Pheidias' masterpieces, as was also the bronze statue of the goddess which stood outside. This second statue was seventy feet high and bore a golden helmet and shield, and a spear whose shining golden tip might be seen by the home-coming sailors while yet far out at sea.

Many statues of Athena still survive In some the goddess bears a distaff, as patroness of the domestic arts; in others she holds an olive branch as protectress of Athens. In many are to be seen her sacred emblems the cock, the serpent and especially the owl, the symbol of wisdom, which also appears upon many Athenian coins.

In the statue shown in the illustration the goddess wears over her

chiton a heavy peplos which fastens on the right shoulder. The aegis, or goat's skin, fringed with snakes and bearing the Gorgon's head in the centre, is thrown about her shoulders, while for a helmet she wears a dog's skin. In many statues she is represented as armed with spear, helmet of the pattern associated with Britannia, and shield bearing the Gorgon's head which turned beholders to stone. For since those activities in which she was interested flourished best in time of peace, the goddess was always ready to go to war against rude disturbers of that peace. Moreover, she lent ready aid on many occasions to her favourite heroes when hard pressed in battle; and during the siege of Troy she was the constant friend and companion of the Greek generals, often turning the tide of battle in their favour.

Like all the other gods, Athena was by no means free from human failings Her chief fault was a proud and hasty temper, as is seen in the story of Arachne (Vol. I., page 68), the unfortunate maiden who rashly challenged the goddess to a weaving contest, and for her presumption was changed into a spider. But on the whole, the Greeks seem to have thought of Athena as a being of noble and lofty character, and she was worshipped with unfeigned adoration by the Athenians whose city she guarded, "holding her hand above us"

THE STORY OF THE SIEGE OF TROY

MENELAUS, the king of Sparta, had a beautiful wife called Helen There came to his palace one day a handsome visitor, a prince of Troy in Asia Minor His name was Paris and he was the son of king Priam Menelaus received his royal guest with great honour, but unhappily Paris fell in love with Helen. While Menelaus was absent on a hunting expedition Paris persuaded Helen to run away with him to Troy. Soon the two lovers were speeding across the blue sea in a swift ship.

When Menelaus returned and discovered what had happened he sent to all the chieftains in Greece to ask them to help him to recover the beautiful Helen Most of them came bringing with them their warriors Among them was Agamemnon the king of Argos, who was chosen to be commander. Next came the swift-footed Achilles, a great warrior, son of the goddess Thetis. The gigantic Ajax, mighty in battle although slow in council, the crafty Ulysses, and Nestor, the wise counsellor, were the chief of those who came to help. Troy had its heroes as well. Chief among them was Hector, great in battle and noble in character. There was also Aeneas, the son of Anchises and the goddess Venus. After two years of preparation the mighty fleet set out for Troy For nine years they besieged the city without success, and many heroes fell in battle on both sides.

Then a quarrel broke out between king Agamemnon and the hero Achilles, and Achilles sulked in his tent, refusing to fight for the Greeks. Agamemnon apologised to Achilles and sent presents to him to try and persuade him to fight, but still the hero refused. Everything was going very badly with the Greek army. They had drawn their ships on shore, and made a wall round them to protect them. The Trojans, led by Hector, broke a hole through this wall, and made plans to set fire to the ships.

Then the mighty Ajax, bearing his massive shield and shaking his great spear, fought Hector. Hector hurled his lance at the warrior. It was aimed well and struck Ajax where the belts which held his sword and shield crossed on his breast, but it fell without going through his armour. Then Ajax seized a huge stone which was propping up one of the ships and hurled it at Hector. It struck the Trojan on the neck and he fell prostrate on the plain. His men seized him and bore him away to safety.

The greatest friend of Achilles was named Patroclus. When Achilles saw the wall broken, flames coming from one of the ships, and Ulysses, Agamemnon and many

heroes wounded, although he still refused to fight he was sorry for the Greeks. So he lent his armour to Patroclus and told him to lead his men to the battle, and so put courage into the fainting Greeks. He warned Patroclus, however, to be content with driving back the Trojans. He was not to press them as far as their walls.

When the Greeks saw the shining armour of Achilles they raised a great shout and drove the Trojans away from the ships. Then Patroclus forgot the warning of Achilles. In the battle he fought against Hector and was slain, and Hector took his armour. The news of his friend's death roused Achilles, who wished to rush once more into battle with the Trojans, but he had no armour. A new suit of armour was made for him by the god Vulcan in one night. Then, clad in this splendid armour, he went to Agamemnon and the two became friends again. Returning to battle he did great deeds and at last slew Hector. Then Achilles himself was slain some time after by Paris, who shot him in the heel with a poisoned arrow.

Still Troy was not taken, although so many brave warriors had fallen. Troy could not be taken by the strength of warriors alone.

The crafty Ulysses advised the Greeks to make a great wooden horse, to fill it with armed warriors and to leave it on the shore This they did, and the fleet with all the army sailed away. The Trojans were delighted. They thought the siege was over Then they found the great horse, and wondered what it was for. Some Trojans came forward dragging a Greek. They promised him his life if he would answer truly the questions they asked.

They asked what the horse was for. He replied that it was an offering to the goddess Athena whom the Greeks had offended. To the question why it was made so large, he replied, "So that the Trojans cannot drag it into the city."

That decided them, and with songs of triumph they dragged the monster into the city. At dead of night the Greek fleet came back and stole silently to the now unguarded walls. The men in the horse came out and quietly opened the city gates. The city was set on fire; the people rushing out of the burning houses were slain. It was a night of blood and terror. Troy was captured at last

Through the darkness, seeking vainly for his lost wife, went Aeneas, bearing on his shoulder his aged father, and leading by the hand his little son Julius. He was among the few that escaped.

THE STORY OF ULYSSES

At the taking of Troy nearly all the Trojans had been killed. Paris, who had caused all the mischief, and who had killed Achilles, was shot by a poisoned arrow and died as he deserved Helen was restored to her husband, who forgave her and took her back to Sparta, where they lived happily for the rest of their lives.

Agamemnon, the king of men, on his return home was murdered by his wife who had fallen in love with someone else during his long absence. Evil fortune seemed to come on most of the Greeks. Ulysses whose counsel had been so valuable to the Greeks, like the rest set out for home with his men in several ships. The god of the sea was angry with him, however, and it was only after many adventures and much suffering that he arrived home at his own island of Ithaca, where his wife Penelope had been waiting for him for twenty years. Here is the story of one of his adventures.

Ulysses and his sailors landed on an island where they feasted and rested after their long voyage. From the island they could see the land of the Cyclopes, great giants who had only one eye set in the middle of their foreheads. They saw the smoke arising from the fires, and heard the voices of the Cyclopes and the bleating of their sheep and goats.

After the sun had set and darkness had come on they lay down on the beach by the sea.

When the rosy-fingered dawn appeared then Ulysses held a council of his men and said, "Stay here, my trusty comrades, but I will go with my own ship and crew and will find out what kind of men these are."

So he spake and climbed up into the ship The crew sat in order on the rowing benches, and smote the heavy sea with their oars When they came to the land they saw a cave near the sea, lofty and arched over with laurels. All around was built a high courtyard with deep buried stones and with tall pines and lofty oaks. Here lived a monster unlike a bread-eating man, rather was he like the wooded peak of a lofty mountain.

Then Ulysses, choosing twelve men, left the others in charge of the ship Taking with him a goat skin of dark sweet wine and some corn he made his way to the cave But the cave was empty for the Cyclops was tending his flocks upon the pastures Inside the cave were baskets laden with cheeses, and pens crowded with lambs and kids. The men begged Ulysses to take the cheeses and drive the lambs and kids to the shore, and sail away over the salt water. Ulysses refused to do so, for he wished to see the monster. At last the Cyclops came in, bearing a huge bundle of dry wood, which he cast down heavily on the floor. The men were afraid and rushed into a nook of the cave.

Next the Cyclops drove the fat flocks into the cavern and began to milk his ewes and goats. Then he raised on high a huge door-stone; that stone not twenty-two good four-wheeled wagons could have lifted from the ground When he had finished his labours he turned to the men and said, "Strangers, who are ye? Whence sail ye the wet sea paths? Is it for trade, or are ye pirates bringing woe to men of all races?"

Then Ulysses told him that they were Greeks and came from Troy, and begged him to fear Zeus and treat them well, for Zeus was the god of strangers The Cyclops replied that he feared no gods, and asked Ulysses where he had left his ship The crafty Ulysses answered that his ship had been wrecked and he and his men had been cast ashore on the island.

The story of his escape will be found in Lesson VI, Fourth Year's Course of Composition

THE STORY OF PANDORA

IN the time of Cronos there were men on the earth. That, indeed, was such a happy time that it was called the "Golden Age." All men were good, and there was no need to punish them. There were no swords, spears, or helmets, for men all lived in peace and happiness

The earth was so fruitful that men did not have to work at ploughing or sowing. The weather was always delightful. It was neither too hot nor too cold There were always hosts of beautiful flowers, the rivers flowed with milk and wine, and honey ran from the trees

There was no pain, and no sorrow. When men died they had a pleasant dream, and during this dream they became spirits. People could see them no more, but they stayed with man and helped him.

When Jupiter became king of the gods this pleasant time changed Jupiter divided the year into seasons Then men first suffered from heat and cold and had to live in caves, or build shelters in the woods. Crops had to be sown, and men had to work very hard to get food. Jupiter, in fact, did not like men, and after making their lives hard and miserable, he took away from them the gift of fire. Prometheus was a lover of men and was very angry because they had been treated so badly. So he once more did a very brave deed. He went up to heaven, and stole fire from there again, this time bringing it in a hollow tube.

Jupiter, of course, soon found out what he had done and made up his mind to have

his revenge. He sent for Vulcan, the god who was a great craftsman, whose forge and workshop were under Mount Etna, and told him to make a woman out of earth. She was to be very beautiful, and each god and goddess was to give her something. So Venus the goddess of love and charm gave her beauty, Mercury gave her boldness and cunning, and Apollo gave her cleverness in music. She was named Pandora which means "all-gifted." Her gifts, however, were meant to bring man to misery and ruin.

Mercury, the messenger of the gods, took her to the earth and gave her to Epimetheus, the brother of Prometheus, who was so delighted with such a beautiful present that he made her his wife. Now Epimetheus was not so wise as his brother. Although Prometheus had warned him not to receive any present from Jupiter, when Epimetheus saw the beautiful Pandora he forgot all about the warning.

Pandora brought with her a beautiful box which she was forbidden to open. For a long time she kept on looking at this box, and wondering what was in it. She knew that it was wrong to open it. She tried not to think about it, but at last she could not wait any longer.

"There cannot be any harm," she said to herself, "in just having one peep inside." So one day when Epimetheus was away and there was no one in the house but herself, she went quietly to the box and raised the lid

What a dreadful surprise she had! Out of the beautiful box flew all kinds of horrible things—pain, fevers and terrible diseases which hurt men's bodies, and, worse than these, spite, lies, jealousy, and other sins to harm his mind. She rushed away in terror, but running back to prevent any other dreadful things from escaping, she shut down the lid Alas! it was too late! All the evil things were already outside the box, and had started to do their dreadful work One thing remained, that was all. Unlike the others it was beautiful. Its name was Hope.

Over two thousand years ago the old Greeks used to tell this story to their children, to explain to them how it was that wickedness and disease had come into the world.

THE RETURN OF PERSEPHONE

(Class Picture No. 158)

DEMETER, the goddess of the meadows and cornfields, had a little daughter named Persephone, whom she dearly loved. Her greatest fear was that some harm should happen to the child Every day Demeter went out to visit the fields and meadows, to see that the young corn was sprouting, and the tender grass was growing.

"Farewell, Persephone," she would say. "Do not wander too far from home while I am away"

"No, indeed, mother," Persephone would reply, holding up her little face to be kissed. Yet in spite of her little daughter's promise, Demeter always hurried home from her work, fearful lest anything should have happened to Persephone while she had been away.

One fine day, when Demeter had gone, Persephone and her companions went out into the meadows. What merry games they had! They played at ball, and chased the gaily-coloured butterflies that flitted here and there in the sunshine. Then, when they were tired with play, they began to pick flowers to make into garlands for their hair.

Persephone wandered away by herself. "My garland shall be the fairest of all," she said. "I shall put in it only the very prettiest flowers."

Forgetting her mother's warning, she wandered on, picking a flower here and a flower there, till her little arms were full.

"Now I must turn back," she thought. Just then she caught sight of a beautiful flower which she had never seen before. Its long black stalk bore over a hundred snow-white blossoms, which gave out a delicious scent.

"Oh!" cried Persephone, "I must have that one," and, dropping all her other flowers, she seized the tall stalk with both hands.

It proved harder to pluck than she had expected; for some minutes she pulled and tugged in vain. Determined to have it, she rested her little arms and then made one great effort to pull it up. With a tearing sound the plant came up by the roots, leaving a black gaping hole in the ground where it had grown. To her amazement the hole grew wider and wider before her eyes until it became a yawning black pit which seemed to sink to the bottom of the earth. Clasping the great white flower in her arms, Persephone stepped back from the widening hole. A rumbling sound came out of it, growing louder and louder, till Persephone dropped her flower in terror and covered her ears with her hands. Then out of the hole dashed an ebony chariot, drawn by coal-black horses and driven by a dark-faced man with flashing eyes.

"Aha, little Persephone," he cried. "I am Pluto, king of the Underworld. I have often watched you at your games, and I have loved you for your fair face. Now you shall come with me to my dark palace under the earth, and be my bride, and queen of the Underworld."

Before poor Persephone could turn to run away, he had caught her up in his arms and swung her into his chariot. Then he grasped the reins, the horses turned and dashed back into the hole, and the earth slowly closed over the spot.

Persephone's little friends waited long in the meadows for their playmate to return. At last, when it grew dark, they dared wait no longer, and sadly set out for home. On their way they met Demeter hurrying towards them. "Where is Persephone?" she cried. "Is she not with you?"

"Alas," was the sorrowful reply of the children, "we do not know what has become of her. She wandered away picking flowers and she did not come back."

"She is lost! She is lost!" cried Demeter. "Persephone! Persephone! where are you?"

Then a sad time began for the earth. In her sorrow, Demeter forgot to tend the fields and meadows and watch over the orchards. The corn withered and died, the apples and pears fell from the trees and lay rotting on the ground, the grass dried up and the cattle starved for want of food. All day and all night Demeter wandered over the earth, crying, "Persephone! come back to me!"

After nine days and nine nights of wandering, Demeter came to the bank of a river. Its guardian spirit, the fair nymph Arethusa, was bathing in its clear waters.

"O Arethusa," cried the sad mother, "have you seen my lost child Persephone?"

"Yes, I have seen her," replied the nymph, "but it is ill news that I can give you of her. My streams run underground through the dark hall of Pluto's palace under the earth, and there I saw your daughter sitting beside Pluto on a golden throne. Her face was sad and pale, as if she longed to be out in the sunshine once again."

Demeter cried fiercely, "I will go to Zeus, king of the gods, and implore him to make Pluto give me back my child."

She climbed the steep side of Mount Olympus, where the gods dwell, and found Zeus seated on his throne of clouds. When he heard her story he said, "I will send Hermes, my swift messenger, to Pluto. It may be that he will restore your daughter to you."

Hermes, the swift messenger, set out to visit Pluto, but soon returned with the terrible news that Pluto would not give up his bride.

"Then woe to all the earth!" cried Demeter. "No green thing shall grow upon it, and men and beasts shall die, unless my daughter is restored to me."

At these terrible words the gods trembled, for they feared that all men would perish. Zeus called Hermes, his messenger, to him again. "Go once more to Pluto," said the king of the gods, "and say that I, Zeus the Thunderer, command him to return Perse-

phone to her mother. He will not dare to disobey me"

Now all this while little Persephone had sat silent and sorrowful on her golden throne. In vain did Pluto's cooks serve up before her the most tempting dishes and the most delicious drinks She could neither eat nor drink. Pluto's heart was deeply grieved, for he loved her dearly.

"Why will you not eat, Persephone?" he asked gently. "See, here is a ripe pomegranate" He handed her a round juicy fruit, about the size of an orange, and filled with seeds

"Eat but one mouthful of this," he begged, "or you will die and break my heart."

Pluto looked so sad that Persephone took pity on him. She began to eat

At that moment Hermes, the swift messenger burst into the hall. "O Pluto," he cried, "I bring a command from Zeus, whom none dare disobey He bids me take Persephone back to her mother on earth"

"It is the law of my land," replied Pluto, "that whoever tastes food in my hall must remain with me for ever."

"Have you eaten food in this hall, Persephone?" asked Hermes

"Alas," she replied, weeping, "I have eaten six seeds of this pomegranate"

Back flew Hermes to Mount Olympus to tell Zeus that Pluto would not give up his bride because she had eaten six pomegranate seeds in his hall.

Zeus wrinkled his great brows in thought for many minutes. Then he said, "I will arrange matters so that both my sister Demeter and my brother Pluto may be contented. Persephone shall spend half the year with each of them in turn, six months with her mother on earth, and six with her husband in the Underworld Go, Hermes, tell Pluto that this is my will." He nodded his great head as he spoke and the mountains round about shook When Zeus nodded his head, gods and men alike knew that he had to be obeyed.

For the third time Hermes returned to Pluto's hall, and gave the king of the Underworld the message from Zeus. Very sad was Pluto to part with his little queen, but he dared not disobey. Hermes took Persephone by the hand, and led her up to earth once more. At the mouth of the dark cave which is the entrance to the Underworld stood Demeter, holding out her arms in welcome With a cry of joy little Persephone ran to her, and her mother's arms folded her about as if they never meant to let her go again.

Now that her daughter was given back to her, Demeter went about her work again. The grass grew, the corn sprouted, and beasts and men had food once more. For six happy months Persephone and her mother journeyed over the land, watching the growing and gathering of the corn and fruit.

All too soon the six months came to an end, and Persephone was forced to return to her dark-faced husband. Pluto was very kind to her, however, and though she missed the sunny earth and her mother's face, Persephone was not unhappy with him. Demeter, however, would not be comforted while her daughter was away. For the six months while Persephone lived in the Underworld Demeter wandered through the land weeping and wailing as she had done before. The fields lay bare, there were no leaves on the trees, and men and beasts went hungry once more.

When the six months of separation were nearly at an end, Demeter looked out over the naked brown fields and leafless woods. "Persephone will soon be here," she thought to herself, "the world must not look sad when she returns. I will decorate it ready for her coming."

The thought made her smile again, and at once the buds began to sprout on the trees and little plants began to grow. "Spring is here," said the farmers, and they went out to sow their seeds When Persephone came back to the earth she found the land covered with a green mantle—green grass in the meadows and green leaves on the trees.

For six months of the year Persephone dwells happily on earth with her mother. The first months of her stay we call summer, and the last months, autumn, when the harvest is brought in and the fruit is gathered The other six months of the year Persephone spends in the dark Underworld with her husband For three months after she has gone, Demeter weeps and forgets to look after the earth, so that nothing grows upon it This sad time we call winter. Then Demeter looks forward to the time when Persephone will return, and she sets to work to prepare the earth for her coming This happy time, when all green things begin to grow again, we call spring. Then on the first day of summer, when the sun shines warmly and the birds sing, we know that Persephone has returned to earth, and has brought the summer with her.

THE STORY OF HYACINTH

APOLLO was very fond of a beautiful youth named Hyacinth. The two friends were always together. Apollo carried the nets when Hyacinth went fishing, led the hounds when he went hunting, and followed him when he went for journeys over the mountains. The sweet-sounding lyre, and the swift arrows of Apollo were laid aside, for he could think of nothing else but his handsome friend.

One day they were playing a game of quoits In this game each hurls a disc made of metal as far as he can. Apollo seized the disc and with wonderful strength and skill hurled it into the air. The disc went high up, and was falling far away, when Hyacinth, excited with the sport, and wishing to throw in his turn, ran forward to get it. The disc had been thrown with such force, however, that it bounded from the earth, and struck the youth on the forehead, so that he fell fainting to the ground.

The god, pale with terror at what he had done, rushed forward, and tried to heal the wound, but it was in vain

As a lily with a broken stem hangs its head and turns its flowers to the earth, so the head of the dying youth drooped over his shoulder.

"Thou art dead, O Hyacinth," sobbed Apollo; "robbed of thy youth by me. O that I could die in thy place Alas! I am a god and cannot die. All I can do is to sing in sweetest music of thy sad death and turn thee into a flower."

While golden Apollo was speaking, from the blood-stained ground sprang up a flower like a lily in form but purple in colour. Apollo wrote upon the petals of the flower the word "Ai!" which means "Alas!"

So when spring returns once more and we see the purple hyacinth growing from the cold earth, we shall remember the sad death of Hyacinth, and the sorrow of Apollo.

THE STORY OF DAPHNE

ONE day, Apollo saw Cupid playing with his bow and arrows, and told him that little boys should not play with weapons of war, as they were dangerous. He should leave arrows to men who knew how to use them and be content with toys fit for a child.

Cupid was angry because he understood that Apollo was making fun of him. He replied, "O Apollo, thy arrows may strike all other things on the earth, but my arrows shall strike thee."

So saying, he took from his quiver two arrows, one sharp and made of gold, the other blunt and tipped with lead. With the leaden arrow he struck the beautiful maiden Daphne, the daughter of the god of the river, and with the golden shaft he pierced Apollo through the heart.

At once Apollo fell in love with the maiden, but she did not love him The arrow of lead turned away her thoughts from loving men at all.

She loved the woodland sports. Like Diana, she loved hunting, and had no wish

for any youth to love her. She was healthy, strong and beautiful. Her eyes shone like stars Apollo tried to come near her, but the swift-footed huntress fled away from him.

"Stay, maiden," said he, "I am not thy enemy. I wish to love thee. I am not a countryman, a rude peasant. Jupiter the king of gods is my father. I am the god of the sun All things I know, present and future. I am the god of music and song My arrows fly straight and sure, but alas! an arrow stronger than mine has pierced my heart. I am the god of medicine and can cure diseases, yet I suffer from an illness that no medicine can cure."

The maiden, however, did not stay to listen to him, she sped swiftly forward in her flight. The wind blew through her hair which streamed loosely behind her. In spite of her swiftness the god gained on her in the race He was just about to catch her. His panting breath was blowing her hair. Her strength began to fail. In despair she called upon her father, the river-god: "Help me, father! Let the earth open and swallow me up, or change me into something so that I can escape this great danger."

The river-god heard, and answered her prayer. Hardly had she finished speaking when her limbs became stiff and a change came over her Apollo reached forward to grasp her, but he found that he was grasping a laurel tree, and the maiden had vanished altogether. Even as he stood there, surprised and disappointed, the branches shrank from his touch.

"Since thou canst not be my wife," said Apollo, "thou shalt be my tree. I will take thy leaves to crown my head; yea, with them will I make garlands for my harp and quiver. When victors come from the wars a laurel wreath shall be put on their brows. I give thee also eternal youth; thou shalt be always green, and thy leaves shall not fade away"

So now you know why great men of old prized a wreath of laurel It was the highest honour a soldier could receive. You have also learned why the laurel is ever green.

THE STORY OF CLYTIE

CLYTIE, like Daphne, was a water nymph, but instead of fearing the sun-god, Clytie loved him. Apollo, however, did not return her love. She gazed at him constantly in the hope of winning his smile, but never once did he trouble even to notice her.

Apollo's coldness filled Clytie with grief. She seated herself by the waterside and let down her golden hair which floated carelessly in the breeze. Touching neither food nor drink, for nine days she mourned there, never taking her eyes from the figure of Apollo riding across the heavens daily in his golden car.

At length the gods took pity on Clytie, and changed her from a maiden into a sunflower. So to this day the sunflower stands as a type of faithfulness. All the summer through she turns her golden head towards the path of the bright sun from its rising to its setting.

JUPITER AND THE BEE

LONG, long ago a bee spent many tiring months filling with honey all the cells of wax that she had made, until the combs were full to overflowing with the sweet yellow fluid. Then, taking one of the honeycombs, she flew off with it to Mount Olympus and offered it as a gift to the gods.

They were all delighted with the dainty dish.

"O bee," said Jupiter, "in return for your kindness ask anything you wish, and it shall be granted you."

"Most mighty Jupiter," replied the bee, "I live always in fear of being robbed of my honey, and have no weapon with which to protect myself and my goods. Grant me, therefore, a sting powerful enough to kill any creature that comes too near my hive"

Jupiter was angry at this spiteful demand,

which showed that the bee cared more for her property than for the lives of others

"Bee, you shall have your sting," said he, "but not exactly as you wish Whenever you use it against another creature, it shall hurt but not kill him, and your own life shall pass away with your sting"

And now whenever a honey bee uses its sting, the bee dies.

LATONA

ONE day the goddess Latona was rambling with her two children through the fields of Lycia. Towards midday the heat of the sun made them very tired and thirsty. They were therefore delighted when they came across a pure, cool pond, and hastening to the side of it, the goddess knelt down to drink some of the water.

"Be off! Leave the pond alone!" shouted several harsh voices, and looking up in surprise the goddess saw some peasant men and women waving her away angrily. They had rough knives in their hands and were cutting bundles of the rushes and reeds that grew in plenty round the edge of the pond.

"You have no right to prevent me from having a drink of water," said the goddess. "The air around us, the sunshine and the streams are given by heaven freely to us all. I do not want to bathe in the pool," she added in a pleading tone. "I ask only for a drink. My throat is parched, and the faintness of my voice makes it plain to you how thirsty I am. A little of this cool water will revive my failing strength. Look at my poor children, too, begging you to have pity on them and allow them to quench their thirst."

The selfish country people, however, would not listen to the goddess's appeal

"Be off!" they cried again, shaking their fists in a threatening way. "You shall not drink from the pond. We will beat you unless you go away at once."

At this unkind treatment the goddess forgot her weariness and flew into a rage. Stretching her right hand to heaven she cried, "From this day may you never leave the pond again!"

Hardly had she spoken when a change came over the selfish peasants They shrank into small creatures. Their mouths widened, their necks vanished and their heads appeared joined to their backs. Their angry speech changed into harsh croakings. They began to leap in and out of the water, and swim up and down the pond.

Because of their unkindness, they had been transformed into frogs!

THE MOUNTAIN ASH

A FEAST was being spread for the gods on Olympus Great preparations were going forward, and all was bustle and excitement. Suddenly a cry arose from Hebe, the pretty cupbearer of Jove "I cannot find the golden cup of Jove!" she wailed.

Nobody on Olympus knew where it was. Many of the gods and goddesses joined in the search for it, but in vain. Just when Hebe was giving way to despair, the eagle, the bird of Jove, flew down beside her. "I have discovered where the golden cup is," said he. "It has been stolen by demons, who are guarding it in a mountain cave. Ask Jupiter to allow me to fly down to earth and rescue it."

Hebe carried her request to the father of the gods, who graciously gave his permission with a nod. The eagle then set forth immediately on his way, and flew many miles over land and sea to the mountain cave where the demons were keeping watch over the stolen treasure. Bravely the eagle fought them, beating his wings against their heads to blind them and striving to tear them in pieces with his terrible beak and talons.

The crowd of demons, however, shot at and pierced him with sharp arrows, and,

swarming round the cup, would not let him approach it. Drops of blood and feathers from the eagle's breast and sides were scattered over the mountain slopes, but still he would not give in, though he felt his strength gradually ebbing away. At length his wings faltered and drooped. He began to sink, and with a yell the demons rushed towards him in a body, thinking he was dying. At that moment the eagle saw his chance. In their sureness of victory the demons had left the cup unguarded. Gathering together all his failing strength and swiftness, the noble bird rose again above their heads, and then swooped down like lightning upon the cup Seizing it in his talons he soared out of the cave and away to Olympus, heedless of the hail of arrows shot after him by the furious demons. Arrived at Olympus he was greeted with cheers, and all the gods and goddesses showered honours upon him.

In memory of the fight, wherever the eagle's blood and feathers had fallen upon the mountain side there sprang up graceful trees On every tree the branches with their leaves resembled great feathers, and when in autumn time the clusters of fruit appeared, each berry looked like a bright drop of blood

THE RIDDLE OF THE SPHINX

LONG ago in Greece lived a strange monster named the Sphinx who was feared by all. She had the face of a beautiful woman, but the body and terrible claws of a lioness Every day she lay in wait on a high hill ready to pounce on those who passed by Those who fell into her clutches had to guess a riddle, and, if they could not, she would kill them. Nobody had ever guessed her riddle, so one person after another had met with a cruel death

At last a young man named Oedipus made up his mind to guess the riddle of the Sphinx. He was a brave and clever fellow. "Farewell, friends," he said to the young men he knew. "I am going to speak to the Sphinx Wish me good luck"

"Heaven bless you," they cried, and he set out along the road. He walked straight up to the monster, and looked her boldly in the face. "What is your riddle?" he demanded.

"There is a wonderful creature," said the Sphinx, "whose like is not to be found by land, sea or air. At first it goes on four legs, then on two and at last on three. What is this creature?"

Oedipus stood lost in thought, turning over the Sphinx's words in his mind. All at once he guessed the answer "It is MAN!" he cried. "When he is a baby, man crawls on his hands and feet, as if he had four legs. When he grows to manhood, he walks on two. In his old age, he needs a stick to help him along and so may be said to walk on three legs."

"Woe is me! my spell is broken! You are right," wailed the Sphinx. She leaped from the hill top, and was dashed to pieces on the rocky ground below. Oedipus turned back for home. His comrades saw him coming in the distance, and ran out to greet him with songs and laughter. To this day he is called a hero of the Greeks.



STORIES OF ANCIENT ROME

ROMULUS AND REMUS

THIS story tells how Romulus founded the city which was called after his name, Rome.

You remember how the Greeks took the rich city of Troy and burned it to the ground A Trojan prince named Aeneas escaped from the burning city and fled with a few friends to Italy for safety. There, on a hill beside the river Tiber, he built the Long White City, in which he ruled as king. After him reigned his son, and ten more kings followed one after the other, the last of whom was called Numitor Now Numitor had a wicked younger brother named Amulius, who thought it unfair that Numitor should be king rather than himself. So he gathered a band of soldiers and drove his elder brother from the throne and made himself king, and he shut up Numitor's beautiful daughter Sylvia in a strong tower from which she could not escape. Thus the wicked Amulius thought to make himself safe on the throne

One day a servant came in haste to the king with a strange message. "O king," said he, "the Princess Sylvia has twin baby boys" The king trembled with fear, for he thought that when the boys grew up to be men they would take from him his throne Then he was filled with anger and shouted to his servant, "Fling the brats into the river! They shall not grow up to take my kingdom from me!"

The poor babes were placed in a wooden trough, but the river ran so swiftly that the servant was afraid to come near it, and he laid the trough on the bank near by The water crept higher and higher till at last it swept round the trough, which floated away The river bore the children gently along in their strange cradle till the trough was caught in the roots of a fig tree which overhung the water The children began to cry with hunger, when a she-wolf passing by heard them and came to see what the noise was. "Poor little cubs!" she thought, "I have lost my own babies, and will feed these instead." She carried the little ones gently to her den, and there she fed and warmed them as tenderly as if they had been her own cubs A woodpecker, too, came to know them and she brought them ripe berries from the woods, so that in time the twins grew into fine boys.

One day, when the she-wolf was out hunting, a shepherd chanced to pass her den and he saw the boys playing before it Full of amazement he took them home to his cottage, and he and his wife brought them up as their sons, naming them Romulus and Remus They helped him to mind his sheep on the hillside and they looked upon him as their father.

When the lads had grown into strong young men it chanced one day that a dispute arose between Remus and some other shepherds They took him before their master who was none other than Numitor, the king who had been banished from his kingdom and now kept cattle and sheep like other men When Numitor saw the handsome young man he felt strangely drawn to him, though little guessing that it was his own grandson whom he saw. He asked the lad if he had a father, and on hearing that Remus had a father and a twin brother, he ordered them to be brought before him. When the old shepherd arrived with Romulus, Numitor questioned the man, who told the strange story of his finding of the babes. Then Numitor knew that his daughter Sylvia's children stood before him, and he embraced them with joy.

The two young princes gathered their friends together and marched to the Long White City. They drove the wicked Amulius

from his throne and set their aged grandfather once more upon it.

When Numitor died, Romulus and Remus shared his throne and for a while they ruled together in peace. Then a quarrel arose between them They wanted to build themselves a new city, but Romulus wanted to build it on one hill and Remus said that another was a better place. Neither would give in, for each thought that the place which he had chosen was the better. "Let us see what the gods have to say," cried Remus. "Perhaps they will send us a sign. Look! There are six vultures flying past. That means good luck to me." "Not so," replied Romulus, "for see, there go twelve vultures It is I who shall have good luck and I must therefore choose the site of our new city" But Remus would not agree, and the brothers parted in anger.

Romulus and his friends started to build a city on the Palatine hill near the Tiber. They chose a great square of ground and round it dug a deep ditch and then they began to put up a wall. Remus came to see how Romulus was getting on with the work and he began to mock at what his brother had done. "Do you call that a wall?" he jeered. "Do you suppose that such a wall as that will keep out your enemies? Why, I can leap over it myself." So saying, he leaped over the wall. Romulus, stung by his taunts, raised his spade with which he had been digging and struck his brother such a blow that he fell dead.

After this hasty deed Romulus was exceedingly sorrowful He buried his brother and mourned for him for many days. But mourning could not bring dead Remus back, and at last Romulus went on with his building. In time his little town grew into a great city which bore the name of Rome in memory of him The story tells that he was taken up to heaven in a fiery chariot by his father, the god Mars, and he was afterwards worshipped as a god.

If you go to Rome, you will see on the Palatine hill a cage in which a wolf is kept in memory of this old story of the she-wolf who cared for Romulus and Remus when they were tiny babies

HOW HORATIUS KEPT THE BRIDGE

THE following lines are part of one of Lord Macaulay's *Lays of Ancient Rome*, which were published in 1842 After the story has been told, (Vol. III, page 11) the children will be delighted to hear this poem read to them.

Lars Porsena of Clusium
  By the Nine Gods he swore
That the great house of Tarquin
  Should suffer wrong no more.
By the Nine Gods he swore it,
  And named a trysting day,
And bade his messengers ride forth
East and west and south and north,
  To summon his array.

And now hath every city
  Sent up her tale of men,
The foot are fourscore thousand,
  The horse are thousands ten
Before the gates of Sutrium
  Is met the great array.
A proud man was Lars Porsena
  Upon the trysting day.

But by the yellow Tiber
  Was tumult and affright:
From all the spacious champaign
  To Rome men took their flight.
A mile around the city,
  The throng stopped up the ways,
A fearful sight it was to see
  Through two long nights and days.

I wis, in all the Senate,
  There was no heart so bold,
But sore it ached and fast it beat,
  When that ill news was told.
Forthwith up rose the Consul,
  Up rose the Fathers all;
In haste they girded up their gowns,
  And hied them to the wall.

They held a council standing
  Before the River Gate;
Short time was there, ye well may guess,
  For musing or debate.
Out spake the Consul roundly:
  "The bridge must straight go down;
For, since Janiculum is lost,
  Nought else can save the town."

Just then a scout came flying,
  All wild with haste and fear,
"To arms! to arms! Sir Consul:
  Lars Porsena is here"
On the low hills to westward
  The Consul fixed his eye,
And saw the swarthy storm of dust
  Rise fast along the sky.

And nearer fast and nearer
  Doth the red whirlwind come,
And louder still and still more loud,
From underneath that rolling cloud
Is heard the trumpet's war-note proud,
  The trampling and the hum
And plainly and more plainly
  Now through the gloom appears,
Far to left and far to right,
In broken gleams of dark-blue light,
The long array of helmets bright,
  The long array of spears.

But the Consul's brow was sad,
  And the Consul's speech was low,
And darkly looked he at the wall,
  And darkly at the foe.
"Their van will be upon us
  Before the bridge goes down;
And if they once may win the bridge,
  What hope to save the town?"

Then out spake brave Horatius,
  The Captain of the Gate ·
"To every man upon this earth
  Death cometh soon or late.
And how can man die better
  Than facing fearful odds,
For the ashes of his fathers,
  And the temples of his Gods?

"Hew down the bridge, Sir Consul,
  With all the speed ye may,
I, with two more to help me,
  Will hold the foe in play.
In yon straight path a thousand
  May well be stopped by three
Now who will stand on either hand,
  And keep the bridge with me?"

Then out spake Spurius Lartius;
  A Ramnian proud was he ·
"Lo, I will stand at thy right hand,
  And keep the bridge with thee."
And out spake strong Herminius;
  Of Titian blood was he
"I will abide on thy left side,
  And keep the bridge with thee."

"Horatius," quoth the Consul,
  "As thou sayest, so let it be"
And straight against that great array
  Forth went the dauntless Three
For Romans in Rome's quarrel
  Spared neither land nor gold,
Nor son nor wife, nor limb nor life,
  In the brave days of old.

Then none was for a party,
  Then all were for the State;
Then the great man helped the poor,
  And the poor man loved the great,
Then lands were fairly portioned,
  Then spoils were fairly sold,
The Romans were like brothers
  In the brave days of old.

Now while the Three were tightening
  Their harness on their backs
The Consul was the foremost man
  To take in hand an axe.
And Fathers mixed with Commons,
  Seized hatchet, bar, and crow,
And smote upon the planks above,
  And loosed the props below.

Meanwhile the Tuscan army,
  Right glorious to behold,
Came flashing back the noonday light,
Rank behind rank, like surges bright

Of a broad sea of gold.
Four hundred trumpets sounded
A peal of warlike glee,
As that great host, with measured tread,
And spears advanced, and ensigns spread,
Rolled slowly towards the bridge's head,
Where stood the dauntless Three.

The Three stood calm and silent,
And looked upon the foes,
And a great shout of laughter
From all the vanguard rose
And forth three chiefs came spurring
Before that deep array;
To earth they sprang, their swords they drew,
And lifted high their shields and flew
To win the narrow way,

And now no sound of laughter
Was heard among the foes
A wild and wrathful clamour
From all the vanguard rose.
Six spears' lengths from the entrance
Halted that deep array,
And for the space no man came forth
To win the narrow way

But hark! the cry is Astur.
And lo! the ranks divide;
And the great Lord of Luna
Comes with his stately stride
Upon his ample shoulders
Clangs loud the fourfold shield,
And in his hand he shakes the brand
Which none but he can wield

Then, whirling up his broadsword
With both hands to the height,
He rushed against Horatius,
And smote with all his might.
With shield and blade Horatius
Right deftly turned the blow.
The blow, though turned, came yet too nigh;
It missed his helm, but gashed his thigh;
The Tuscans raised a joyful cry
To see the red blood flow.

He reeled, and on Herminius
He leaned one breathing-space,
Then, like a wild cat mad with wounds,
Sprang right at Astur's face;
Through teeth, and skull, and helmet
So fierce a thrust he sped,
The good sword stood a hand-breadth out
Behind the Tuscan's head.

And the great Lord of Luna
Fell at that deadly stroke,
As falls on Mount Alvernus
A thunder-smitten oak
Far o'er the crashing forest
The giant arms lie spread,
And the pale augurs, muttering low,
Gaze on the blasted head.

But meanwhile axe and lever
Have manfully been plied;
And now the bridge hangs tottering
Above the boiling tide.
"Come back, come back, Horatius!"
Loud cried the Fathers all.
"Back, Lartius! back, Herminius!
Back, ere the ruin fall!"

Back darted Spurius Lartius,
Herminius darted back:
And, as they passed, beneath their feet,
They felt the timbers crack.
But when they turned their faces,
And on the farther shore
Saw brave Horatius stand alone,
They would have crossed once more

But with a crash like thunder
Fell every loosened beam,
And, like a dam, the mighty wreck
Lay right athwart the stream.
And a long shout of triumph
Rose from the walls of Rome,
As to the highest turret-tops
Was splashed the yellow foam.

And, like a horse unbroken
When first he feels the rein,
The furious river struggled hard,
And tossed his tawny mane,

And burst the curb, and bounded,
Rejoicing to be free,
And whirling down, in fierce career,
Battlement, and plank, and pier,
Rushed headlong to the sea.

Alone stood brave Horatius,
But constant still in mind,
Thrice thirty thousand foes before,
And the broad flood behind.
"Down with him!" cried false Sextus,
With a smile on his pale face.
"Now yield thee," cried Lars Porsena,
"Now yield thee to our grace"

Round turned he, as not deigning
Those craven ranks to see;
Nought spake he to Lars Porsena,
To Sextus nought spake he;
But he saw on Palatinus
The white porch of his home;
And he spake to the noble river
That rolls by the towers of Rome.

"Oh, Tiber! Father Tiber!
To whom the Romans pray,
A Roman's life, a Roman's arms,
Take thou in charge this day!"
So he spake, and speaking sheathed
The good sword by his side,
And with the harness on his back
Plunged headlong in the tide.

No sound of joy or sorrow
Was heard from either bank;
But friends and foes in dumb surprise,
With parted lips and straining eyes,
Stood gazing where he sank,
And when above the surges
They saw his crest appear,
All Rome sent forth a rapturous cry,
And even the ranks of Tuscany
Could scarce forbear to cheer.

But fiercely ran the current,
Swollen high by months of rain
And fast his blood was flowing,
And he was sore in pain
And heavy with his armour,
And spent with changing blows
And oft they thought him sinking,
But still again he rose.

And now he feels the bottom,
Now on dry earth he stands;
Now round him throng the Fathers
To press his gory hands,
And now, with shouts and clapping,
And noise of weeping loud,
He enters through the River Gate,
Borne by the joyous crowd.

They gave him of the cornland,
That was of public right,
As much as two strong oxen
Could plough from morn till night;
And they made a molten image,
And set it up on high,
And there it stands unto this day
To witness if I lie.

When the goodman mends his armour,
And trims his helmet's plume,
When the goodwife's shuttle merrily
Goes flashing through the loom;
With weeping and with laughter
Still is the story told,
How well Horatius kept the bridge
In the brave days of old.

Lord Macaulay.

THE FOUNDING OF CARTHAGE

THE story goes that Carthage was founded by a beautiful Phoenician princess named Dido. Her home was in the rich city of Tyre, where her father ruled as king. When the old monarch died, Dido's brother became king, but he did not love his sister and drove her from Phoenicia. For years the unhappy princess wandered from land to land searching for a home and finding none One day a storm drove her ashore on the north coast of

Africa. To the weary princess it seemed an enchanted land and she longed to make it her home, but she had spent all her money on her long travels and had none left with which to buy land where she might build a city.

But Dido was a quick-witted woman. "Grant me," she said to the people of the country, "only so much land as the hide of an ox will cover." The natives, thinking this but a trifling gift, granted what she asked.

Then Dido took an ox hide and cut it into the thinnest of strips. These she laid end to end so that they enclosed a hill and part of the country round it, enough land on which to build a citadel. The natives saw that they were outwitted and in their admiration for Dido's cleverness they allowed her to keep the land On it she built a city which was to become Carthage, the rich and powerful rival of Rome. Carthage means "the new city."

Dido became the queen of the people of Carthage and was beloved by all for her beauty and her cleverness. But her life came to a sad end. One day a handsome prince arrived in Carthage. He was Aeneas, prince of Troy, the city which the Greeks had destroyed, and like Dido he was an exile from his home, seeking land on which to build a new city. Dido loved the prince and for a long time they lived happily together. One night a vision from the god Jupiter warned Aeneas that Africa was not his final resting place, and bade him leave his lovely queen and travel on to seek it. Terrible was Dido's grief when Aeneas told her that he must leave her, but no tears or entreaties could make him disobey the divine command. Fearful lest she should hold him back against his will, the prince fled away secretly by night, and when Dido came down to the seashore, she saw his ship far out to sea. Distracted with grief she caused a great pyre of wood to be built and set on fire, then casting herself into the flames she perished. After she was dead her people worshipped her as a goddess.

ANDROCLES AND THE LION

ANDROCLES was a poor Roman slave who lived in the north of Africa hundreds of years ago. Androcles' master was a cruel man who beat and ill-used Androcles till at last he made up his mind to run away.

He knew that if he were caught he would be put to death; so he waited till a dark night and then slipped from his master's house, through the town, and out into the open country.

On and on he ran, always listening for steps behind him, and when day came, he found that he was lost. He was in a huge forest, and too tired to go any farther. He saw a cave in the hillside, and creeping into it, lay down and fell asleep.

He had slept for many hours when a terrific roaring awoke him He looked up, and, to his horror, there in the entrance stood a lion. He had been sleeping in its den. He lay still, too terrified to move, and expecting that it would spring upon him. The lion, however, did not come forward. It moaned and licked one of its paws, seeming to be in pain. "The poor animal has hurt itself," cried Androcles, and he went up to it to see what was the matter. The lion held up its paw, and Androcles saw a great thorn in it. Androcles took the swollen paw gently in his hand and drew out the thorn which was causing the lion such suffering.

How glad and grateful the lion was! He limped away, and soon came back carrying a dead rabbit. Androcles made a fire and cooked it, and, with some water from a spring near by, he and the lion made a hearty meal.

For three years the slave and the lion shared the cave. They hunted together day by day, and slept together at night. Androcles grew very fond of the lion, and the great animal seemed to love him too and would lie purring at his feet like a cat.

At last Androcles longed to see men and women once more. Thinking that he

would be safe after all this time, he left the cave. Alas! he was caught by the Roman soldiers and sentenced to death as a runaway slave. He was ordered to be eaten by a wild beast at Rome.

On the day when he was to die, all the people of Rome crowded to the great circus to see him torn to pieces The emperor of Rome himself was there, seated on a high throne. When all was ready Androcles was thrust into the open space in the middle of the circus, and all held their breath. With a horrible roar, a great, hungry lion bounded into the centre. Everyone expected to see it spring upon the slave and crush him; but lo! it crouched down at his feet, wagging its great tail and licking his hand. It was Androcles' old friend!

All the people were full of wonder at this strange sight and the emperor sent for Androcles to tell him what it meant. When he heard his story, he was so pleased that he set him free and gave him a large sum of money. The noble lion would not go back to his cave, but ever after followed his master about like a faithful dog all day, and slept outside his door at night.

THE LAST FIGHT IN THE COLOSSEUM

IN the joy of the victory[1] the Roman senate invited the conqueror and his ward Honorius to enter the city in triumph, at the opening of the new year, with the white steeds, purple robes, and vermilion cheeks with which, of old, victorious generals were welcomed at Rome. The churches were visited instead of the Temple of Jupiter, and there was no murder of the captives; but Roman bloodthirstiness was not yet allayed, and, after all the procession had been completed, the Colosseum shows commenced, innocently at first, with races on foot, on horseback, and in chariots; then followed a grand hunting of beasts turned loose in the arena, and next a sword dance But after the sword dance came the arraying of swordsmen, with no blunted weapons, but with sharp spears and swords—a gladiator combat in full earnest. The people, enchanted, applauded with shouts of ecstasy this gratification of their savage tastes. Suddenly, however, there was an interruption. A rude, roughly robed man, bareheaded and barefooted, had sprung into the arena, and, signing back the gladiators, began to call aloud upon the people to cease from the shedding of innocent blood, and not to requite God's mercy in turning away the sword of the enemy by encouraging murder. Shouts, howls, cries, broke in upon his words, this was no place for preachings—the old customs of Rome should be observed—"Back, old man!"—"On, gladiators!" The gladiators thrust aside the meddler, and rushed to the attack. He still stood between, holding them apart, striving in vain to be heard. "Sedition! sedition!"—"Down with him!"—was the cry. The gladiators, enraged at interference with their vocation, cut him down. Stones, or whatever came to hand, rained down upon him from the furious people, and he perished in the midst of the arena! He lay dead, and then came the feeling of what had been done.

His dress showed that he was one of the hermits who vowed themselves to a holy life of prayer and self-denial, and who were greatly reverenced, even by the most thoughtless. The few who had previously seen him, told that he had come from the wilds of Asia on pilgrimage, to visit the shrines and keep his Christmas at Rome. His spirit had been stirred by the sight of thousands flocking to see men slaughter one another, and in his simple-hearted zeal he had resolved to stop the cruelty or die. He had died, but not in vain. His work was done. The shock of such a death before their eyes turned the hearts of the people; they saw the wickedness and cruelty to which they had blindly surrendered themselves; and from the day when the hermit died in the Colosseum there was never another fight of gladiators.

[1] The victory of Stilicho over Alaric (See Volume III, page 104)

HELPS TO BIBLE TEACHING



From the picture by William Blake] [*Newtonian Illustrated Press Service*

THE MEETING OF SOUL AND BODY

I. BIBLE LANDS

Preliminary note.—The suggestions in these articles have a limited scope. They are not intended to cover the theological or doctrinal side of the teaching, but simply to supply illustrative material for the background of lessons. The lessons primarily in view are those to be given to children between the ages of seven and eleven years old, and particularly lessons on the Gospel story [1]

The Land and the Book.—The Bible consists of thirty-nine books of the Old Testament and twenty-seven of the New, supplemented by those of the Apocrypha variously enumerated. The Old Testament books were written in Hebrew, those of the Apocrypha, like those of the New Testament, in Greek Of the Apocryphal books—which were not accepted into the strict Hebrew Canon—some, like I and II. Maccabees, are of great value as helping to bridge the historical gap between the Old Testament proper and the New; others, like Ecclesiasticus and Wisdom, bridge the gap between Greek and Hebrew culture.

The books of the Old Testament are spread in time over something like a thousand years, while the New Testament books all probably had their origin in a single generation. But all alike have one common feature, for, speaking generally, all have as their background the land we call Palestine, and nearly all of them were actually written in that land Moreover, all of them except two—St Luke's two books, the Third Gospel and the Acts—were written by men of Hebrew race: and the Greek of the New Testament, like the Hebrew of the Old, is racy of the soil.

So the Bible cannot be really understood without intimate reference to the land in which its writers spent their lives, which supplied them with their metaphors and illustrations and the substance of their parables and allegories. Its climate and atmosphere, its structure and scenery, its fauna and flora, its products, the housing of its population, their habits and their costumes —all these are reflected in the Scriptures and give a special turn to its imagery and to its characteristic interpretation of human nature and of the ways of God.

Thus the teacher will need to be familiar—as is fully realised to-day—with the main features of life in the Holy Land, and especially with those many points in which they differ radically from the conditions of our own life. Indeed, he must go further afield than Palestine, if he is to master adequately the background of the Old Testament. For he must accompany the twelve patriarchs into ancient Egypt, and share in that land the fortunes of the oppressed Hebrews.

He must go out with Moses into the Sinaitic peninsula, and sojourn there for forty years, drinking in the austere impressions of the wilderness Again, at a later period, he must pass with the captives of the fallen kingdom of Judah to Babylon in the "Land of the Two Rivers."

All these three, in contrast to Palestine—"a land of brooks of water, of fountains and depths, springing forth in valleys and hills" (Deut. viii. 7)—are alike countries of sandy waste and wide horizon: but whereas the wilderness of the Wanderings is characterised by an outcrop of lofty mountains, Egypt and Mesopotamia have great rivers as their main features, and draw, from the Nile and from the Tigris and Euphrates respectively, the means of settled agriculture and of a highly organised civilisation. Their natural features, however, are soon described and do not help us very much. It is their monuments that are all-important. And those of the Sinaitic desert are negligible.

[1] The biblical references are taken from the Revised Version

With Mesopotamia, and Egypt and Palestine and the desert that lies between the two last, the World Wars have left us a little more familiar than we were before; and the British mandates over Palestine and 'Iraq have facilitated the work of archaeology in the Holy Land and in Mesopotamia, "Ur of the Chaldees," in particular, having rendered up results of great importance. But while we unearth the relics of far-off centuries, we also transform the face of the country by "modern improvements" and remove many of the old surface landmarks.

Especially is this true just now in Palestine itself. Modern transport, and drainage and irrigation, and electric power involving immense plant of machinery in the Jordan valley, new tools for craftsman's work, new implements for the farmer, and progressive mechanisation of agriculture; the infiltration of European costumes and twentieth century forms of architecture—all these and many other inevitable changes are rapidly obliterating the features which linked the Palestine of yesterday so intimately to that of Bible days The "Unchanging East" is no longer unchanging in Palestine or elsewhere So we have special cause for gratitude to the many nineteenth and early twentieth century scholars, writers and artists who amassed on the spot a wealth of vivid detail before the changes began: the pioneers being Dean Stanley of *Sinai and Palestine*, Thomson of *The Land and The Book*, and those who immediately followed them.

Babylonia.—The civilisations of ancient Babylonia and Egypt are treated in the historical sections of Volumes I. and II. We may add a word or two about the bearing of their monuments on the elucidation of the Bible.

Mesopotamia, the immense basin of the two rivers Tigris and Euphrates, was the scene of an extremely early—if not the earliest—human civilisation. The recent excavations at Ur have yielded up traces of pottery, etc., that must be dated at least as early as 3000 B.C., and give evidence of a dynasty of kings as early. They give us clear traces of a civilisation that was rudely interrupted by a vast inundation at a very early period—suggesting a background for the story of the Deluge in Gen. vi.-viii.—and was resumed on the same spot after a lapse of many years.

Incidentally they enable us to construct a Chaldaean house of the period when Abraham sallied forth from Ur with his father Terah on his way to seek his fortune in the land of Canaan (Gen. xi. 31).

They carry us down through the periods of Chaldaean, Assyrian and Babylonian domination to the time of that Belshazzar who figures in the Book of Daniel. In these latest finds we have evidence of enormous wealth, of a skill in the goldsmith's craft that has probably never been surpassed; of immense progress in the arts of life, and notably in architecture and military organisation. These finds, and those discovered earlier at Nineveh, Borsippa and elsewhere, provide a background, not only for the Babylonian Captivity of the Jews, but also for the story of Creation, the narrative of the Tower of Babel—which may have been actually the *Ziggurat*, or sacred architectural mountain of Babylon itself, of which a vivid parallel has been unearthed at Ur—of the Flood (as we have seen) and of those later contacts with Assyria and Babylon which are recorded in the Book of Kings, Isaiah, Jeremiah and Ezekiel. Indeed, the interesting details unearthed from the mounds of Mesopotamia are far too numerous for more than a passing mention here.

The great library of King Ashur-banipal, son of Esar-haddon (whom the Greeks called "Sardanapalus"), discovered at Nineveh, records for us the whole vast story of Assyrian and Babylonian history and religion. We can reconstruct enough of the polytheistic religion of Babylonia to realise how the Hebrews may have been indebted to their far-off Mesopotamian ancestry not only for those legends and traditions which we find in a purified form in the early



From the statue by Michelangelo [*Photo Anderson*

MOSES

chapters of Genesis, but also for some elementary principles of spiritual worship. We have psalms of praise and of penitence almost worthy of the Bible Psalter (and the Babylonian psalms actually conclude with our familiar "Amen"!); and in the written description of the temple of Babylon discovered by George Smith among the inscribed tablets from Nineveh, there are features, like that of the great bronze laver, that seem to be reproduced in Solomon's Temple.

The Code of Laws of the Babylonian King Hammurabi, discovered by De Morgan at Susa, is of special interest. Hammurabi himself (*c.* 2100 B C) has been identified, with some probability, with the "Amraphel king of Shinar" of Gen xiv, contemporary with Abraham. The laws are well thought out and are extraordinarily detailed in their application to the life of a complex civilisation, and form a suggestive parallel and contrast to the later legislation of Moses

Egypt.—The Egyptian monuments depict for us a dynasty of kings—the Hyksos—of Semitic origin (round about 1600 B C) who might well be friendly to the Hebrew patriarchs At a later period the archaeological finds at Tel-el-Amarna give us evidence of a form of writing (the "cuneiform" or arrow-headed script cut into the surface of stone or brick, in which all the Babylonian inscriptions are written), in use in the fourteenth century B C. all over Egypt, Palestine and Syria as well as Mesopotamia.

They introduce us to a "heretic" King Amenhotep IV. (1379-1365 B C.) who held mystical religious ideas far in advance of his time, some of which may have filtered through to Moses in a later generation. Amenhotep was a convinced monotheist, and changed his own name to Akhenaten, to avoid the idolatrous association with Amen, one of the deities of the Egyptian Pantheon, and erased the name Amen from many extant inscriptions.

His attempted reforms failed to carry the people with him, and only weakened the throne and the empire. His correspondents write again and again pleading for reinforcements to Egyptian strongholds in Syria and Palestine, gravely threatened by Hittite invaders. Their brick-letters were apparently filed unanswered, the king being too deeply absorbed in religious contemplation to attend to politics or war. The Egyptian hold on Palestine was thus loosened, and a way prepared for the later invasion by the Hebrews.

The Egyptian monuments give us a varied and detailed picture of the Egypt in which the patriarchs lived as welcome guests, and their successors as serfs. They display in abundance such spacious granaries as are implied in the story of Joseph's administration (cf. Gen. xli. 48). They reveal the Pharaonic bricks which Joseph's descendants and successors manufactured with so much pain and anguish under the lash of their taskmasters· the excavations actually include the site of the "store city," Pithom, mentioned as built by Israelites in Ex. i. 11, in which some of the bricks recovered have chopped straw in their composition, though the straw demanded by the Israelite workers was principally used as accessory in the process of making the bricks. "Pharaoh commanded the taskmasters. . . . 'Ye shall no more give the people straw to make brick, as heretofore let them go and gather straw for themselves'" (Ex. v. 7) Indeed, if we can trust identifications accepted by many scholars, we may actually gaze to-day, in the Cairo museum, on the mummified remains of the Pharaoh of the Oppression, Rameses II. (*c.* 1290-1234), and Merenptah (1234-1210) the Pharaoh of the Exodus: of whom there are lifelike statuary portraits also to be found in Turin and Cairo respectively.

The many details we can gather about the Egyptian cults (in which the worship of animals figured largely), together with the study of the phenomena of the Egyptian agricultural year, do much to illumine the

classic story of the *Ten Plagues*; and the numerous pictorial records on the monuments make vivid for us the life of those days—a civilisation which must have had many common traits besides the cuneiform writing, as developed in Egypt, Palestine, Syria and Mesopotamia. So the Egyptian as well as the Babylonian monuments give us valuable help in reconstructing the life of ancient Palestine.

II. PALESTINE

Physical features.—Palestine—the "Holy Land" for Jews, Christians and Moslems alike—is that region of southern Syria, which is bounded on the west by the Mediterranean sea, on the north by the mountains of Lebanon, Anti-Lebanon and Hermon (to the east of which lies Damascus), on the east by the Syrian and Arabian deserts, and on the south by that rolling desert country called the *Negeb* or "South Country" which falls away into the wilderness of the Sinaitic peninsula and the frontier of Egypt. Its area is, roughly, 140 miles long and 50 miles wide.

Remote and secluded in its hill fastnesses, it provides in its maritime plains the historic highway of connexion through the pass of Megiddo between the ancient empires and civilisations of Mesopotamia and the Nile valley In this, as in other ways, it forms a uniquely appropriate background for the Bible.

Its most notable feature, and one unique in the geography of the world, is the great cleft or depression, generally below sea level and at its lowest point some 1,300 feet below the Mediterranean. It begins in the north between the ranges of Lebanon and Anti-Lebanon, and runs due south to the Gulf of Akaba in the Red Sea. The part of it that falls in Palestine is the Jordan valley, called in Arabic *El Ghor*, i.e. "The Rift," which has a drop of some 1,200 feet in the space of 120 miles or so from the point where the Jordan gushes out a fully fledged river from the rock cavern at Banias (Caesarea Philippi) to the point where it loses itself in the Dead Sea. By the time it reaches the Sea of Galilee it has already fallen to 680 feet below.

The contours of Palestinian geography follow, in general, the lines of this rift, which is flanked on east and west by two chalk and limestone ridges. The eastern range—"beyond Jordan"—rises to a height of 6,000 feet, and forms an effective rampart against the sands of the great desert which flanks it eastward This range was known in Old Testament times as the land of Gilead and Bashan; in the New Testament as Peraea and Decapolis.

The western range includes the hills of Galilee with Mt. Tabor (some think the scene of Christ's Transfiguration), Mt Gilboa (where Saul and Jonathan met their death); the hills of Samaria, of which Mt. Carmel (famous in the story of Elijah), is a spur, and the hill country of Ephraim and Judaea (where David tended his flocks as a boy, ranged as an outlaw and reigned as king) It is less lofty than the eastern range, but reaches here and there a height of some 4,000 feet.

Between Carmel and the hills of Galilee lies the fertile plain of Esdraelon, with the famous battlefield of Megiddo (Armageddon), and the river Kishon, scene of Deborah's victory In the course of many centuries the pass of Megiddo witnessed the procession of Egyptian, Hittite, Assyrian, Babylonian, Macedonian and Roman armies Farther south the hills slope down westward to a broad plain that flanks the Mediterranean, known to the Hebrews as "The Great Sea." Just south of Carmel along the coast is the famous plain of Sharon, and south of this again the land of the Philistines

PALESTINE—PHYSICAL

PARALLEL SECTIONS

Mediterranean Sea	1 Maritime Plain	2 Foot Hills, etc (*Shephelah*)	3 Western Range	2 Foot Hills, etc Jordan Valley	3 Eastern Range

PALESTINE

IN THE TIME OF OUR LORD.

Palestine in the Time of Our Lord

The Maritime Plain.—We may thus divide the land into parallel sections, all running due north and south, and each with its own special soil, climate and products.

There is the *maritime plain* on the extreme west, the home successively of Canaanites and Philistines. This, with its warm, temperate climate and its rich alluvial soil, is the great grain-growing section of Palestine From the Canaanites who occupied this region in early times, the Holy Land derived its Old Testament name of the "Land of Canaan". from the Philistines its Latin name of *Palestina*, whence our modern "Palestine"

These Philistines, whom the prophet Amos couples with the Israelites in a well-known passage (ix. 7.), "Have not I brought up Israel out of the land of Egypt, and the Philistines from Caphtor?" had probably wrested the maritime plain from the Canaanites shortly before the Hebrews invaded the highlands. If Caphtor is Crete, as seems probable, they represent the most ancient civilisation of the Mediterranean region and that "Minoan" culture, of which Sir Arthur Evans has unearthed so many marvellous relics. And the excavations of the Palestine Exploration Fund at Gezer, besides throwing light on many centuries earlier and later, testify to the high culture attained by these Philistines—far in advance, in material ways, of that of their Hebrew neighbours.

They held the coastlands till the days of David, and, in the period immediately preceding, reduced the Hebrews to a state of bondage. Samuel (1 Sam. iv.-vii.) and Saul (1 Sam. xiii.-end) struggled against them with varying success. David finally subdued them (2 Sam viii.) and incorporated their rich lands in his kingdom.

The Hills and Valleys.—Secondly there are the foothills and lateral valleys of the two great limestone ranges, and the deep valley of the Jordan which lies between them. These strips, varying from the temperate climate and moderate fertility of the lower slopes, to the tropical heat of the deep gorge, are the most apt for fruit growing—for vineyards and olive yards, for figs, pomegranates and (in ancient times) for palms—which are now found more thickly along the coast. As we have already suggested, the fertility is more marked in the north—in Galilee and Samaria.

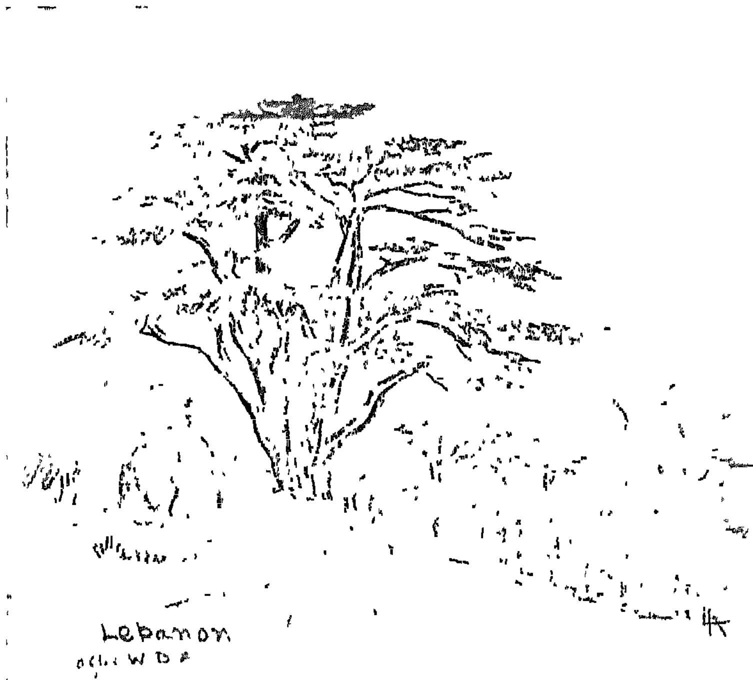
The foothills also served, in history, a strategic purpose. The intricate maze of lower hills and valleys that intervened between the Judaean uplands and the great plain, known as the *Shephelah*, was a protective bulwark against invasion, and an ideal theatre for guerrilla warfare. This was the "debatable land" where David repeatedly engaged the Philistines. When Saul opposed them in the north, on mount Gilboa, they were apparently aiming at turning his flank, and raiding the Jordan valley. "And the men of Israel fled from before the Philistines, and fell down slain in mount Gilboa" (1 Sam. xxxi 1).

Lastly there are the two lines of hills which flank the Jordan valley east and west—on the west the hills of Ephraim and Judah, on the east mount Gilead and the mountains of Moab beyond the Dead Sea. These high downs with rounded tops are the ideal pasture land of the country. Here the patriarch ancestors of the Israelites roamed with their flocks and herds, and here the Hebrew invaders under Joshua first consolidated their conquests. In the "hill country of Judaea" are concentrated the most sacred sites of Palestine: Jerusalem itself, and Bethany and Bethlehem

Flora and Fauna.—The range of altitude in Palestine is, as we have seen, remarkable. Snow-capped Hermon on the north rises to a height of 9,000 feet above sea level; the lower reaches of the Jordan valley near the Dead Sea sink to a depth of about 1,300 feet below. Thus the range of difference is something like 10,300 feet in all, and the range of temperatures and of flora and fauna corresponds The heights of Hermon and Lebanon are the home of the world-

famous cedars, the king of trees (Jud ix 15; 1 Kgs iv. 33; Ps. lxxx. 10, etc), which with the "oaks of Bashan" recur constantly in the Old Testament as a figure of grandeur, height and strength The cedar forests are now reduced to a few groves; but these contain specimens of extraordinary age and girth—the largest over 40 feet in circumference, and possibly 2,000 or more years old

The flora of this region is strictly alpine: while in the deeps round Jericho—anciently called the "City of Palm Trees"—and in the gorge of Jordan, the vegetation is tropical, and leopards and jackals still range Of old it was the haunt of bears and lions, such as those encountered by Samson (Jud xiv. 5) and David (1 Sam. xvii 34), and that lion killed by David's captain, Benaiah, of whom we read "he went down also and slew a lion in the midst of a pit in time of snow" (2 Sam xxiii 20). Only in Palestine, it has been said, could you find a lion and snow together!



Wild deer, roebuck and antelope in this region, afford the leopards a congenial prey

Then, on the high chalk downs and limestone ridges, fresh green in the short springtime—as were the hills of Galilee when the crowd were disposed "like flower beds" for Jesus to feed them (Mk. vi 39; Jn. vi 10)—brown with drought all through the summer, we meet the flocks and herds familiar to us, while foxes, wild goats, jackals and hyaenas are found in the wilder districts, and the hill herbage, with dwarf oaks, hawthorns and arbutus and myrtle, thyme and mint.

In the foothills and valleys, too, flourish fruit trees common to our temperate clime almonds, apricots, quinces, pears and apples —the latter as great a favourite now as in the days of the Song of Songs (ii. 3, 5; vii 8; viii 5), and mingled with these the characteristic trees of Mediterranean lands; the olive and the vine, the fig and sycomore, with the mulberry and pomegranate These are to be found, too, in the maritime plain,

together with vast tracts of our familiar wheat and barley, which have been sown and reaped there from time immemorial

The terebinth or turpentine tree is often mentioned in the Old Testament (mistranslated "oak") in connection with idolatrous hill shrines, and the oak itself, in different varieties—there are no less than nine species—covers almost every range of climate in the land, from the coastal plains to the alpine heights. In the more temperate regions is found also the dark green carob tree, with its beans much used in diet, whose pods have been rendered famous as the "husks" of the parable of the *Prodigal Son* (Lk. xv 16).

The flowers of Palestine are the perpetual amazement and delight of visitors and tourists, who, in the springtime, can see vast areas of valley and plain carpeted with blooms of all colours, among which are conspicuous the gorgeous anemone, the iris and the gladiolus—all three claimants to be the "lilies of the field" that outshine the glory of Solomon's raiment.

Of Palestinian mammals some of the most prominent have already been mentioned. There were, of course, the camel—employed chiefly for journeys across the desert, and mentioned by Jesus in the proverbial saying "Ye blind guides, which strain out the gnat, and swallow the camel" (Mat. xxiii 24), and the familiar ox and ass, inexpressibly useful in agricultural and other operations, and, like the Irish pig, sharing the shelter of the peasant's roof

The wild boar is apparently indigenous in Palestine, and is mentioned in Psalm lxxx 13 as the enemy of vineyards; but swine's flesh was strictly forbidden by the Mosaic law (Lev xi. 7), and swine—which are very rarely mentioned in the Bible—were in New Testament days probably non-existent in Judaea. We know, however, that they were to be found in large herds in the neighbourhood of the Sea of Galilee (Mk. v. 11, ff); and this was natural, because of the large infusion of Gentiles into the population of that region. Tiberias itself was an entirely Gentile city · and the scene of the Gerasene miracle is probably on the cliffs opposite that town.

Apart from the parable of the *Prodigal Son*, Jesus only once mentions swine, and then coupled with dogs in a proverbial expression "Give not that which is holy unto the dogs, neither cast your pearls before the swine" (Mat. vii. 6).

Dogs, of course, are frequently mentioned in the Scriptures. They were already familiar to the Israelites in Egypt, in the days of the Exodus (Ex. xi. 7). We know from a reference in the Book of Job (xxx 1) that they were already employed by shepherds in early times, and from a passage in Isaiah that they were used as barking guardians of the home—and were subject to the perennial tendency of domesticated animals to become greedy and torpid! "His watchmen . . . are all dumb dogs, they cannot bark; dreaming, lying down loving to slumber. Yea, the dogs are greedy, they can never have enough." (Is. lvi. 10 and 11). But alike in the Old and New Testaments the name of a "dog" is most often used as a term of scorn and abuse. The reason, no doubt, is to be found in those troops of hungry, wild and ownerless curs to be found in the streets of every town and village, acting as noisy and boisterous scavengers, devouring carcasses and other offal, and at times proving a menace to human life So the psalmist cries (Ps. xxii. 16), "For dogs have compassed me," and again (Ps. xxii 20), "Deliver me from the power of the dog." We have seen how our Lord couples them with swine in His proverbial injunction. Because "dog" was a term of reproach commonly applied by Jews to Gentiles, He—surely half-playfully suggests to the Syro-Phoenician woman, that it is not seemly to take the children's bread, and cast it to dogs, and is pleased with the retort suggesting that dogs have their place in the household (Mk vii 27-28). The mention of the dogs licking the beggar's sores, in the parable of *Dives and Lazarus*

(whether kindly or in loathing) is suggestive of their habitual presence in the streets (Lk. xvi. 21).

If only for his place in literature, the coney must not be omitted here. *Procavia Syriaca* (mentioned in Lev. xi. 5 as not to be eaten, and in Pr. xxx. 26 and Ps. civ 18 as dwelling among the rocks) is *not* a rabbit. His nearest kinsman is found in South Africa; but he has a superficial resemblance to the rabbit alike in his appearance and in his gregarious and burrowing habits.

Birds, Insects and Reptiles.—A word must be said in conclusion about the birds, insects and reptiles of Palestine. The species of birds are very numerous, and include woodcock and crows and jackdaws, besides the eagles, ravens, sparrows, turtledoves, pigeons and domestic poultry mentioned in the New Testament, and in the Old Testament more than a dozen more (among them owls, storks, cranes, pelicans, partridges, swallows and quails). Jeremiah (viii. 7) had observed the migratory habits of the turtledove, the crane and the swallow. The word translated "sparrow" means "a twitterer," and is a general term for such small perching birds as are still greatly valued as food, and sold cheaply in the markets (Lk. xii 6). To the crows our Lord doubtless refers among the birds that follow the sower to snatch up the uncovered seed (Mat xiii. 4).

Curiously enough the *singing* of birds is only twice mentioned in the Bible: "The flowers appear on the earth; the time of the singing of birds is come, and the voice of the turtle is heard in our land" (Song of Songs ii 12) and in Eccles. xii 4, but it certainly played its part in the background of life.

Among insects, bees are often mentioned in the Old Testament, as is natural in the case of a land said to be "flowing with . . . honey" (Ex. iii. 8). Alike in the woodlands and in the deserts wild bees are very plentiful, so that Jonathan comes upon honey in the forest (1 Sam. xiv 25) and the Baptist can feed upon it in the wilderness (Mat. iii 4). These bees have been found formidable by modern travellers, as by the ancient psalmist (Ps. cxviii 12) who describes his enemies as "compassing him about like bees." Among other insects the hornet also is a symbol of terror (Ex. xxiii. 28, Deut. vii 20, etc.), and the locust—against whose ravages in Bible lands to-day we are fighting on concerted scientific lines—as a typical instrument of devastation, alike in Egypt (Ex. x 12) and in Palestine (Joel i. 4, ff) In the Levitical law the various species of locust are discussed as articles of diet (Lev. xi 22).

Ants of various species figure prominently in the teeming insect life of Palestine, and are mentioned twice in the Proverbs, as examples of industry (Pr. vi 6) and sagacity (Pr. xxx. 25).

Flies and sandflies ("lice") are mentioned only among the plagues in Egypt (Ex. viii. 16, 20), but are of course only too plentiful—our familiar houseflies and many more troublesome species—in Palestine, as in all hot countries, and contribute their full share to the eye trouble and festering sores which afflict a population backward in hygiene, and the flea, a prevalent pest cordially hated by the Arabs, is mentioned incidentally in Samuel: "After whom is the king of Israel come out? after whom dost thou pursue? after a dead dog, after a flea" (1 Sam xxiv. 14, and also see 1 Sam. xxvi. 20).

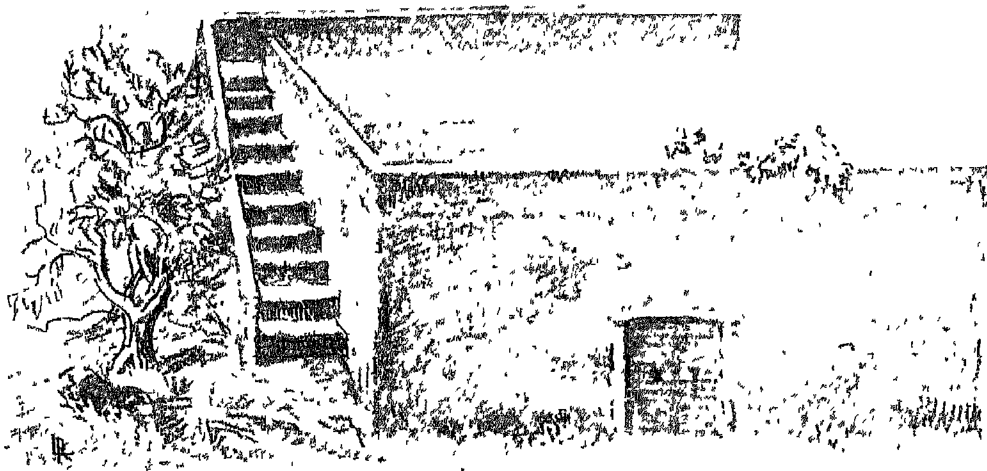
The moth, mentioned some eight times in the Bible, is obviously what we know as the "clothes moth" typical in Christ's mention in the *Sermon on the Mount* of its destructive habits (Mat. vi. 19). The larva of this moth is mentioned in Is. li. 8, where it is translated "worm." The same translation represents various caterpillars, one of which destroys the vines (Deut. xxviii. 39). The worm feeding upon the bodies of the dead occurs several times in the Old Testament, and it is from Isaiah lxvi 24 that Jesus quotes about the undying worm and the unquenched fire—alluding to the fires

burning in the valley of Hinnom outside Jerusalem where rubbish was burnt (Mk. ix 45, 46, 48)

Enormous poisonous centipedes are found in the neighbourhood of Tiberias; and scorpions are prevalent in various parts. The scorpion [1] is somewhat like a lobster in general outline, but shiny black and flattish, with a poisonous sting in the end of its slender tail. Our Lord mentions the scorpion twice: once ironically as alternative to an egg as a gift to a child (Lk. xi. 12), and once figuratively as a symbol of evil powers over which His disciples may be victorious (Lk x 19). In each case the scorpion is coupled with the serpent, that primeval symbol of evil. Beginning with the symbolic mention in the Garden of Eden (Gen iii. 1) there are numerous references to the serpent in Old Testament and New, and three references to snake-charming (Ps. lviii. 4, 5; Eccles. x. 11; Jer. viii. 17) which must have been an ancient pursuit Of specific snakes the adder is mentioned (Ps lviii. 4) in the Old Testament as poisonous, and the viper also in the New (Mat. iii. 7, Acts xxviii. 3, 4). Needless to say, these are still found in Palestine.

Of frogs, the only species found in Bible lands seems to be the edible *Rana esculenta*. His only mention, however, is among the plagues of Egypt (Ex. viii. 2-7).

III. LIFE IN THE POOR MAN'S HOME AND LARGER HOUSES



THE POOR MAN'S HOUSE

THE houses of Bible lands were, and are still to-day, very different from our own Those of the wealthy are built round several courtyards: those of the poor peasants (the *fellaheen* as they are now called)—and of these must have been the house of Joseph the Carpenter at Nazareth—were very simple in construction.

Sometimes they were built of squared stone, especially in the south where stone

[1] See blackboard drawing, page 207



From the painting by Sir Edward Burne-Jones] THE STAR OF BETHLEHEM [*Photo. Newton*

was available, sometimes of sun-dried mud or mud-bricks reinforced by timber. (This explains the forcible language used by our Lord of burglaries in Mat. vi 19, xxiv. 43, where the robbers are described in the original as "digging through" the walls)

These houses often have no dug-out foundations In the revised version of Lk. vi. 49, we read of "a man that built a house upon the earth without a foundation," and if you think of such a house of clay built on sand or loose soil, you will see how literal is His vivid account of its destruction in a violent storm of rain and wind: "A foolish man, which built his house upon the sand: and the rain descended, and the floods came, and the winds blew, and smote upon that house; and it fell. and great was the fall thereof" (Mat vii. 26, 27).

The interior of a typical poor man's house is one single room about seven feet high, and on two levels. On the lower level covering about one-third of the whole space is the stable, where the ox and the ass are housed and supplied with rough mangers of wood or hollowed stone filled with chopped straw and barley. Some think that it was in such a lodging that Christ was born in Bethlehem, when there was no room for the Holy Family "in the inn"

Here also one can see goats lying down and poultry feeding.

Out of this "stable" a few stone or wooden steps lead up to a higher platform, which is the family's living room and bedroom all in one. This section of the cottage is sometimes actually called "the bed," as where our Lord says, "There shall be two men on one bed; the one shall be taken, and the other shall be left" (Lk xvii. 34).

Here is the oven of earthenware, in which most of the cooking is done, and the hand mill, where the women of the household grind the corn to wholemeal flour for baking. (There is a Class Picture of an "Eastern Hand Mill", No. 5 in the portfolio.)

Round a low circular table the family sit on their haunches with their feet tucked under them and, after a blessing by the head of the house, eat their simple meal without knives or spoons or forks—using their fingers to help themselves out of the pot or dish, or sometimes an improvised spoon of bread—perhaps the "crumbs," as they are called, which "fall from the master's table" and are eaten by the dogs. Sometimes the host will dip a special "sop" in the dish and hand it to a favoured guest, as Jesus did to Judas at the Last Supper.

At night there is a little oil "slipper" lamp on a lampstand always burning. The Palestinian cannot abide pitch darkness even at bedtime; and this emphasises the irony of Christ's saying, that no man lights a lamp to put it under a reversed bushel measure, or in the cellar or under a bed.

By the light of this lamp may be seen, stretched out on palliasses on the floor, every member of the family asleep. They lie in their day clothes—long white cotton shirt and coloured linen or cotton coat, bound by a sash Their feet are bare, and their only coverlet is the outer cloak of hair cloth. A small baby, it may be, is strung up in a sort of hammock, and the younger children snuggled up beside father or mother.

So we can picture the family at Nazareth asleep; and we can explain to ourselves the unwillingness of the householder in the parable of the *Friend at Midnight* to disturb the whole family by getting up to open the door "Trouble me not: the door is now shut, and my children are with me in bed; I cannot rise and give thee" (Lk. xi. 5-8).

The door itself, even in the meaner houses of modern Palestine, is often an elaborate affair of carved wood, studded with nails and adorned with texts from the Koran. (In ancient times it would be texts from the Old Testament Scriptures.) It has elaborate and cumbrous bars and bolts and a lock of wood, and the key is also of wood.

It opens inwards, like our own house doors, and is provided with a knocker, to be used by any visitor who seeks to enter. To this our Lord alludes when He says "Knock, and it shall be opened unto you,"



From the painting by Mabuse—National Gallery] [*Photo:* W F. *Mansell.*

THE ADORATION OF THE KINGS

and again when He describes His unfaithful disciples as knocking too late, when the master of the house has elaborately locked and bolted the door (Lk. xiii 25).

In a large house, where there was a porch, and a bench in it to sit upon, the door would be opened by a porter or doorkeeper. In the house of Caiaphas it was a female slave who kept the door (Jn. xviii. 16).

In all the houses, rich and poor, a few small windows high up in the wall provide all the lighting, nor is there any chimney for ventilation



ON THE HOUSETOP

The roof or "housetop" is an important feature of these Palestinian houses. In our northern climes high-pitched roofs are possible because of the abundance of timber for beams and rafters, and are general because best suited to conditions of heavy rain and snow. Round the Mediterranean, where rainfall is less abundant and snow very rare, the houses of both rich and poor have more often flat roofs (which require less timber and shorter lengths of beam) or—as in parts of Palestine where wood is scarce or unobtainable—domed roofs of masonry.

The flat roof is really a great asset in hot climates, for on it in the evenings the family can assemble to enjoy the fresh air—as we read of David doing when he could not rest in his bed—"And it came to pass at eventide, that David arose from off his bed, and walked upon the roof of the king's house" (2 Sam. xi. 2).

On summer nights they take up their pallets and sleep there That these flat roofs were common in early times is clear from Deut. xxii. 8, where provision is made for a parapet round the edge, to obviate accidents: "When thou buildest a new house, then thou shalt make a battlement for thy roof, that thou bring not blood upon thine house, if any man fall from thence."

Even in the peasants' houses, where this roof is made of clay spread over brushwood laid upon beams of poplar wood with short sticks for rafters, the roof is still solid enough to form the family's summer bedroom and dining-room; and on such roofs to-day one can sometimes see a goat nibbling the short-lived "grass upon the housetops" of Ps. cxxix. 6. The roof is kept in order and prevented from cracking and leaking by the use of a stone roller always left there for the purpose.

The roof, or "housetop"—mentioned repeatedly in the Gospels—was often approached by an outside staircase, which explains our Lord's words in Mk. xiii. 15 (and the parallel passages), how a man on the roof who finds himself in sudden danger can descend and flee straight into the country without stopping to enter the house at all: "Let him that is on the housetop not go down, nor enter in, to take anything out of his house."

It also explains how the paralysed man in Lk v 19 (and parallels), could be carried by his four friends direct to the housetop, when the crowds round about the door made it impossible for them to force their way into the house itself This house, at Capernaum, was evidently one of the larger kind,

built round a courtyard, Jesus being in a court, or in a veranda which ran round the upper storey The veranda had a tiled roof more flimsy than the solid housetop on which they stood They removed some of these tiles and let down the invalid in his pallet, and the miracle was performed in the sight of a great crowd—all the window seats round the courtyard, and the whole of the space below, being filled with spectators.

It was in such a courtyard, open to the stars, that St Peter stood before the fire in the high priest's palace at Jerusalem. He was "beneath" and the room in which his Master was being tried had one side opening on to the court at a somewhat higher level, so that he could catch His glance when "the Lord turned, and looked upon Peter" (Lk. xxii. 61).

These open halls or guest rooms—in modern times called *Makad*—looking into the courtyard, may also explain how the "woman that was a sinner" could have access to Jesus whilst He was dining with Simon the Pharisee (Lk vii 37), and how on another occasion when He so dined there was such a crowd of onlookers, including a dropsical patient (Lk. xiv 2).

In the richer houses meals were eaten more sumptuously than in the peasant's cottage; larger tables took the place of the small round board we have described The tables, in fact, formed three sides of a square, and on the outside were ranged couches of the same height on which the guests reclined facing the table and resting the left elbow on a cushion This custom came from Persia, and was in use among the Jews after the return from exile. The Greeks and Romans had the same custom. The servants handed dishes and served the guests from within the square (as in monasteries to-day) The disposal of the guests on couches explains how, at the Last Supper, the beloved disciple, reclining on the right of his Master, is described as "reclining in Jesus' bosom" (Jn xiii. 23).

At the second dinner with a Pharisee, Jesus watched the guests competing for the most dignified places at the board (Lk xiv 7), and it may have been that the quarrel of the disciples at the Last Supper was about the same thing (Lk xxii 24)

The waiting at table, which in the more modest houses was done by the ladies—as by Martha in her own house at Bethany (Lk x 40)—would have been performed in these houses of the rich by those household slaves and hired servants so often mentioned in the Gospels (e.g Lk xii. 36 ff.).

They would come round with basin and towel and wash the guests' feet, as Jesus did to His disciples at the Supper (Jn. xiii. 4 ff) and as Simon the Pharisee pointedly omitted to do in Jesus' case: "I entered into thine house, thou gavest me no water for my feet" (Lk. vii. 44).



Woman with Pitcher

And in the Pharisees' houses hands would be ceremoniously washed before the beginning of a meal. Jesus, wishing to break down the excessive formalism of the Pharisees, omitted this (Lk. xi 38), and they were shocked.

To return to the poor man's house The wife and mother would have her life filled with household duties. To her and her daughters it fell to fetch water from the well, to which she would sometimes have to walk as much as a mile. She would let down her bucket by a rope, haul up the water and fill her large pitcher, hoist it on to her head and carry it home with the stately grace that can still be seen in Mediterranean villages to-day. In modern Nazareth the only well is known as "The Virgin's Spring"; and from that we must believe our Lord's mother used to draw water for the family day by day as of old had Jethro's daughters done, and even earlier, Isaac's bride Rebekah "Now the priest of Midian

had seven daughters: and they came and drew water, and filled the troughs to water their father's flock" (Ex ii. 16 ff.).

In the house the woman's place was often at the mill and the oven, which stood not far apart; mill, oven and water jar were all alike necessary for the making of the "staff of life."

Bread making, as we have seen, was one of the housewife's most important occupations, and in this the Mother of Jesus must have spent much of her time. We know enough to be able to describe the process minutely.

Bread was made of wheat, barley, spelt, millet or lentils, and first the grain had to be ground. On occasions a stone pestle and mortar were used, but a stone "mill" was part of the normal furniture of the humblest house.

The mill consisted of two circular stones—the "upper" and the "nether" millstone—and something of the same kind was used till quite lately in the Hebrides and the West of Ireland. The lower stone was slightly larger in diameter than the upper which lay upon it It was fixed, and was slightly concave in its upper surface. In its centre was a small round hole into which a strong pin of wood was tightly fixed The upper stone (cut out of rough lava which does not take a polish), had a funnel-shaped hole in its centre, of which the lower, narrow end fitted loosely to the wooden pin, allowing the stone to revolve Into this funnel the wooden pin passed up Near the circumference of the upper millstone was fixed an upright wooden handle for turning it· shorter if the mill was to be turned by one person, longer if two or more hands were to be employed.

The grain was poured from time to time into the funnel-shaped opening and passed out as flour over the edges of the lower stone, where a clean cloth or skin was spread to receive it This grinding was by tradition the work of women or slaves Sometimes two women sat opposite each other at the mill: "Two women shall be grinding at the mill; one is taken, and one is left" (Mat xxiv 41).

Grinding was considered degrading work for the males of the family, as was drawing water, or carrying kindling-wood. There is a passage in Lamentations (v. 13) which speaks of it as an outrage that "The young men bare the mill, and the children stumbled under the wood"

The noise of grinding—and perhaps the songs of the grinders at their work—was considered part of the normal cheerfulness of life. In a well-known passage of Ecclesiastes (xii. 4), it is ominous "when the sound of the grinding is low" And that it should cease altogether is in Jer. xxv 10, and in Rev xviii 22, noted as a sign of utter desolation.

When sufficient of this wholemeal flour had been milled (and from a comparison of our Lord's parable of the *Leaven* (Mat. xiii 33), with Gen. xviii. 6, it would appear that 3 *seahs* $=4\frac{1}{2}$ pecks was a normal baking), the water pitcher was next in requisition The flour, mixed with water, was kneaded in a trough and sprinkled with salt. If intended for *unleavened* bread it was shaped into flat round cakes or wafers, and was ready for baking For the Passover week leavened bread was forbidden, and only these unleavened wafers used.

Otherwise the housewife inserted into the dough in the trough a lump of fermented dough, and left the leaven to work. Our Lord as a boy had evidently watched it bubbling and rising, and in memory of this utters the short parable to which we have just alluded: "The kingdom of heaven is like unto leaven, which a woman took, and hid in three measures of meal, till it was all leavened" (Mat. xiii. 33)

This homely process supplies apt symbols for both good and bad "propaganda." Here, (as in 1 Cor. v. 6 and Gal v. 9) it stands for a secretly dominating and transfusing influence for good. Elsewhere our Lord uses it of the corrupting influence of the Pharisees and of Herod· "Take heed and beware of the leaven of the Pharisees and Sadducees" (Mat. xvi. 6 cf 1 Cor. v. 7).]

When the dough is "risen," the oven comes into use Sometimes the hearth fire of coals (i.e. sticks or charcoal) may have

BLACKBOARD SKETCH



Interior of a Peasant's House

been used to cook cakes, as in the familiar case where Elijah wakes up in the wilderness and finds by his side "a cake baken on the coals" (1 Kgs. xix 6), or where Christ Himself invites His disciples on the lake-side to a meal of fish and bread cooked on embers: "They see a fire of coals there, and fish laid thereon, and bread" (Jn. xxi. 9). But the normal way of baking was in the oven This oven was sometimes a portable earthenware jar, some 3 feet high; sometimes such a jar was inserted into a hole in the floor, or the oven may even have been a hole in the floor plastered round and made fireproof. It was heated with kindling-wood, dry twigs, thorns, or dried grass, "the grass of the field" of which Christ speaks, "which to-day is, and to-morrow is cast into the oven" (Mat. vi. 30). When the oven is hot enough its sides are wiped clean, and thin circular slabs of dough, about one foot in diameter, are pressed with a pad against the sides, and in a few seconds are cooked. Occasionally cakes are attached also to the *outside* of the oven, in which case they have to be turned when the attached side is brown. Hence Hosea's phrase: "Ephraim is a cake not turned" (Hos. vii 8). This bread when made is never cut with a knife, but always *broken*, and this gives point to the frequent mention in the New Testament of "the breaking of the bread."

Next to bread, milk and its products, cheese and butter, are perhaps the most important elements in the Palestinian bill of fare. Goats' milk is most highly valued, and then the milk of ewes. Arabs still drink milk with their meals, and in some districts a mixture of milk with rice or flour forms a large part of the poor man's diet. Butter, cream, cream cheese, soured milk like that now so fashionable in Europe, and curds are all in use, and butter is sometimes churned by rocking a skin full of milk on the knees, or hanging it to a rafter and beating it A breakfast dish of bread in a bowl with melted butter poured over it is called *samen* by the Arabs.

Jesus speaks of children coming up and asking their father not only for bread but for an egg or a fish. We may be sure therefore that these also were items in the common fare (Lk. xi. 11, 12). He speaks feelingly in another place of the hen gathering her chickens under her wings (Lk. xiii. 34), and we have already pictured poultry as installed in the "stable" part of the cottage. Fish, as we shall see when we speak of the fisherman's craft, were abundant and varied in the Sea of Galilee, and would have been a common article of diet. Olive oil would be used freely, and the local wine, as in all Mediterranean countries, and the fruits of the neighbourhood in season.

Fish was boiled in a pan or pot, and so was meat, whether kid's flesh or beef or mutton, which would be served up in the form of a stew. Probably, however, the principal meat meal of the poorer peasants was the roast lamb of the annual Passover feast. However, little birds were to be had cheap in the markets, and according to the saying of Jesus—recorded in Lk xii. 6—, five sparrows were sold for two farthings.

Besides preparing the family meals, there would fall on the housewife, then as now, the task of mending the children's clothes, and we can see Jesus as a child interested in watching the work, and noticing how too often a point was reached when a threadbare garment could no longer support a patch of brand-new cloth. "No man seweth a piece of undressed cloth on an old garment· else that which should fill it up taketh from it, the new from the old, and a worse rent is made" (Mk. ii. 21).

The housewife must also keep the house clean and tidy—no mean task, without modern wardrobes and cupboards—and it is surely again a reminiscence of His home-life in boyhood when He describes the woman searching for a lost coin—one of ten *drachmas* (corresponding to our shilling or the French franc), which perhaps formed her necklace: "Or what woman having ten pieces of silver, if she lose one piece, doth not light a lamp, and sweep the house, and seek diligently until she find it?" (Lk. xv 8).

IV. JEWISH EDUCATION IN GOSPEL TIMES



From the painting by Fra Angelico] [*Photo W. F. Mansell*

THE ANNUNCIATION

Childhood of Jesus.—A picture of the daily life of Jesus as a boy must not leave out His schooling. His school days probably began when He was six years old, and continued at least till the time when, at twelve years of age (Lk ii 41 ff), He accompanied His parents on their Passover visit to Jerusalem. Even in the thirteenth year, when the ceremony took place by which a Jewish boy became a "Man of the Law," the schooling did not necessarily end.

The summary remarks of St. Luke, "And the child grew, and waxed strong, filled with wisdom: and the grace of God was upon him" (Lk. ii. 40) and again, "And Jesus advanced in wisdom and stature, and in favour with God and men" (Lk ii. 52), doubtless refer to these years, and bespeak a healthy and normal physical development and a mind and spirit conspicuously alert, docile and amiable. This estimate is corroborated by the impression He made at twelve years old upon the professional teachers of the law at Jerusalem, who, we are told, "were amazed at His understanding and His answers" (Lk ii 47)

Up to the age of six He would be taught by His parents, who were charged to inculcate in their children a knowledge of the meaning of the Passover and other great Jewish festivals (following the injunctions of the law). They were bound also to teach them to repeat by heart the great text that every loyal Jew still repeats daily: "Hear, O Israel: the LORD our God is one LORD and thou shalt love the LORD thy God with all thine heart, and with all thy soul, and with all thy might" (Deut vi. 4). (It was called the *Shěma*, from its first word, *Hear.*) These words bore fruit in His ministry, when He answered the lawyer's question about "the great commandment in the law" (Mat. xxii. 37-40). His parents would also teach Him selected verses from the Proverbs and from the Psalms.

The girls of the house at Nazareth—the "sisters" mentioned in the Gospels—were, like all Jewish girls, under the tutelage of their mother from birth till marriage. They were taught, like the boys, to "fear God and keep His commandments"; to read, and probably to write, and were carefully instructed in the duties of domestic life.

The Synagogue School.—At six years old Jesus would begin to go, with His boy companions, to the elementary school attached to the synagogue or local place of worship The school was called "The House of the Book," because all its lessons were drawn from the sacred Book of the Hebrew Scriptures

Every day, except on sabbaths and high festivals, the boys might be seen trooping to school in the early hours of the morning. (There is documentary evidence that in the "dog-days" of high summer they were back at home by 10 a m.!) The pupils sat on the floor, and the teacher on a dais facing them They were taught to address him as "Rabbi," which means "My great one," i e "Master" Our Lord Himself was, in His teaching days, often addressed by this title (as in Jn. i. 38, 49, iii. 2, 26, vi. 25) and after His resurrection St. Mary Magdalen calls Him by a name of still more affectionate reverence, "Rabboni": though He deprecates the love of such titles evinced by the professional teachers of the day: "They love . . . the salutations in the market places, and to be called of men, Rabbi. But be not ye called Rabbi: . . . for one is your master, even Christ" (Mat. xxiii. 7-10).

At home the children habitually spoke the local dialect of the time, a form of the international language which (together with Greek) was then widely employed in the East, and known as Aramaic. In this language are certain words recorded of our Lord: *Talitha cumi*, addressed to Jairus' daughter (Mk. v. 41); *Ephphatha*, spoken to the deaf and nearly dumb man (Mk. vii. 34); and the sorrowful cry upon the Cross, *Eloi, Eloi, lama sabachthani* (Mk. xv. 34). And some of the Galilean children probably spoke a certain amount of Greek—the kind of Greek in which the original of the New Testament was written.

But though expositions were given in Aramaic, all the lessons at school were based on the classical Hebrew of the Old Testament Scriptures; so that devout peasants, who after their schooldays listened week by week to the Hebrew lessons from the Scriptures read in the synagogue services, must have been to some extent familiar with the historic speech of their forefathers

School always opened with a prayer by the teacher that God would watch over the children The method of the lessons was largely that of repetition Their "Three R's" were Reading, Writing and—Religion, of which the last was the most emphasised Whether there was any teaching of arithmetic is not clear If there was, it would be concerned with the numbers, weights and measures of the old Scriptures.

There was no idea of imparting knowledge for its own sake. The orthodox Jews were not interested in science or philosophy or even history apart from religion. The teacher's object was to train up pupils in



From the painting by Holman Hunt—Birmingham Fine Art Gallery]   [*Photo W F Mansell*

CHRIST IN THE TEMPLE

"The fear of the LORD"; and because for the Jew that involved very scrupulous keeping of ceremonial rules, the study of the Book of Leviticus—very strangely to our minds—came first. Even here we can see what side of this teaching must have most interested our Lord as a boy, for the one verse He quotes from Leviticus in the Gospels is Lev xix. 18: "Thou shalt love thy neighbour as thyself" (Mat. xxii. 39).

Scope of the Studies.—Most of the time was spent upon the study of the Pentateuch—the "Five Books of Moses" as they were called, but other books, particularly some of the "Former Prophets" (Josh.–2 Kgs.) and the Psalms, provided material for lessons. The scope of these studies may seem narrow compared with the almost too varied curriculum of our own elementary schools of to-day. But we can judge, perhaps, from the best of our own Old Testament lessons what an immense treasure of seed thoughts is to be found in the Hebrew Scriptures. So true is this that to some of our English forefathers—people like John Bunyan—who had nothing to read except the Bible, the Scriptures formed the basis of a truly "liberal education."

The Jewish teachers of the first century were more interested in legal details than in the general training of the mind: but the pupils were fortunate in the textbook used.

If we study Christ's parables and consider His evident love of nature, which was clearly to Him a book revealing the mind and character of its Creator, we shall be justified in looking for the beginning of this attitude in His school days, and not least in those lessons from the Psalms, illumined by solitary musings on the hillside. To take a few familiar instances, Psalm civ. suggests a God who watches not only the movements of the planetary system, but also the fall of a sparrow (Lk. xii. 6). Psalm lxxx. gives the germ of all the vineyard teaching, both in the parable of the *Wicked Husbandmen* (Mat. xxi. 33 ff.) and in our Lord's description of Himself as *The True Vine* (Jn. xv.)

In Psalm xxiii. we have the starting point for the beautiful imagery of the *Lost Sheep* (Lk. xv. 3–6) and the still more wonderful allegory of Jesus as *The Good Shepherd* (Jn. x.). In all these directions the lessons learnt at school would be driven home and developed by the familiar sights of husbandry and shepherd-craft in the countryside round Nazareth.

Our Saviour's education clearly did not include the special training given to those who aimed at becoming scribes, or professional teachers of the law. Such schools were instituted about the time of His boyhood, and were called "Houses of Study." Those notable Rabbis, like Hillel and Shammai, and Hillel's famous grandson Gamaliel—who taught St. Paul (Acts xxii. 3)—gave "instruction according to the strict manner of the law."

This instruction our Lord certainly did not take, as we may judge from the surprise of His contemporaries at His teaching powers. When He taught in the synagogue at Nazareth they exclaimed: "Whence hath this man these things?" and "What is the wisdom that is given unto this man? . . . Is not this the carpenter . . .?" (Mk. vi. 2, 3). Probably the unique attraction and power of His later teaching owed something to the fact that as a boy and a young man He had not been through the mill of Rabbinical learning wherein the professional scribes were ground.

We can discern the fruits of the sound elementary teaching of His school days which put God always in the centre of His world, combined with His own self-education in the family life and His prayerful musings in solitude, in the first recorded utterance of His lips. This reveals a mind growingly conscious of a specially intimate relation to the Heavenly Father, cropping out in the exclamation of the twelve-year-old boy in the Temple: "Wist ye not that I must be in my Father's house?" (Lk. ii. 49)

This consciousness, emerging doubtless in the school, finds maturer expression in such passages as Mat. xi. 27: "All things have

been delivered unto me of my Father. . . . neither doth any know the Father, save the Son, and he to whomsoever the Son willeth to reveal him"; and in the many utterances about the Father and the Son in the Fourth Gospel (see especially Chs. v. and vii.) culminating in the declarations: "He that hath seen me hath seen the Father" (Jn. xiv. 9); and "I and the Father are one" (Jn. x. 30).

We shall speak more fully of the synagogue and its worship elsewhere. But before leaving the subject of education we must remember the child's training in worship, which was as important then as now. It is clear that, as a grown man, Jesus habitually attended the sabbath worship of the synagogue; and the inference is that it was a habit formed in youth. But it is more than an inference, for the Jewish elementary school was attached to the synagogue, and its master was a synagogue official. And every sabbath day the child accompanied his parents to synagogue as soon as he was able to walk The weekly readings of the Scriptures in an atmosphere of worship would react intensely upon a devout child, then as now.

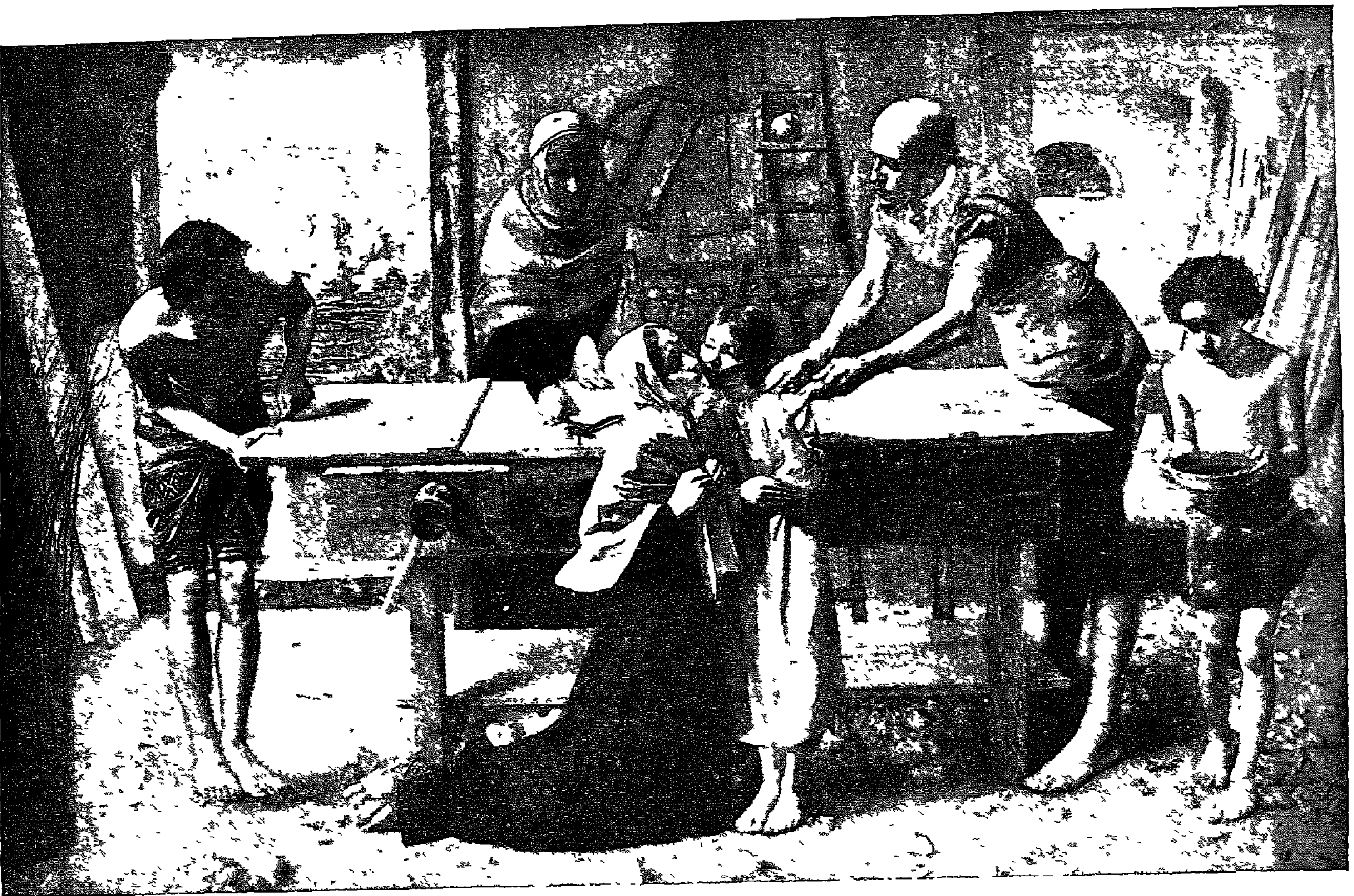
Though what we should call "secular studies" were not taught or encouraged in the schools, every pupil was encouraged to learn a trade, side by side with his study of the Scriptures So St. Paul, who himself became a learned Rabbi, learnt in youth the art of tent making (Acts xviii 3) and largely supported himself by the work of his hands (Acts xx. 34, cp 1 Cor. iv 12) In the same way while Jesus was being educated in the synagogue school at Nazareth, He was also acquiring a technical education in the carpenter's shop of Joseph.

V. THE CARPENTER'S SHOP AND THE OUTDOOR LIFE

Jesus and Joseph.—If we wish to picture the daily life of the home at Nazareth, we must not forget the carpenter's shop. Here St. Joseph, while he lived, supported the Holy Family Here Jesus learned His trade, and apparently after Joseph's death kept the home together by the work of His hands till the younger children of the house could take His place. This perhaps explains why He deferred His wandering ministry till the thirtieth year of His life. The two situations, during Joseph's lifetime and after, are both represented in the Gospels where Jesus is in one place described—as He was popularly known—by the people of Nazareth as "the carpenter's son" and in another as Himself "the carpenter". We can to some extent restore the picture of the tools which Joseph must have employed, and the use of which he taught Jesus.

Carpentry in the Old Testament.—There is curiously little about carpentry in the Old Testament, and where "carpenters" are mentioned in the Authorised Version the reference may sometimes be to workers in stone

There must have been enough skill in early times to fashion ploughs and yokes and other implements of husbandry, as well as for the timber work necessary in the construction of a simple dwelling. An interesting list of agricultural implements is given in an account of Philistine oppression, and the one tool allowed by the oppressors for keeping them in order is the *file*. "But all the Israelites went down to the Philistines, to sharpen every man his share, and his coulter, and his axe, and his mattock; yet they had a file for the mattocks, and for the coulters, and for the forks, and for the axes; and to set the goads" (1 Sam. xiii. 20).



From the painting in the Tate Gallery by Millais [*Photo* W F *Mansell*

THE CARPENTER'S SHOP

When Solomon had to build on a large scale, he was obliged to import foreign carpenters from Tyre and Sidon. He writes to his friend King Hiram: "for thou knowest that there is not among us any that can skill to hew timber like unto the Zidonians" (1 Kgs. v 6).

The Hebrews were backward in higher carpentry. By the time of the later kings, however, during the repairs of the Temple under Joash (2 Kgs. xii. 11) and Josiah (2 Kgs xxii. 6), there seem to have been competent native craftsmen; and when Jerusalem first fell, the conqueror, Nebuchadnezzar, carried away the "carpenters (craftsmen) and smiths" together with the royal retinue into exile (Jer. xxiv. 1; xxix 2).

The first list of carpenters' tools given us in the Old Testament dates from the time of the exile, and describes a Babylonian carpenter fashioning a wooden idol. "The carpenter stretcheth out a *line*; he marketh it out with a *pencil*; he shapeth it with *planes*, and he marketh it out with the *compasses*, and shapeth it after the figure of a man . . ." (Is. xliv. 13).

This is not a Hebrew carpenter, yet in Mesopotamia and in ancient Egypt, in whose monuments we have a few pictures of contemporary carpenters at work, it is probable that much the same tools were used as in Palestine. So we may add to our list the *file*, the *line*, the *pencil*, the *compasses* and the *plane*

To the list above a few essential tools may be added The *saw* is mentioned in the Old Testament, but only with reference to masonry. It is probable that for sawing wood the Hebrews used an instrument like that of the ancient Egyptians and the modern Syrians, which, unlike our modern hand saw, had its handle placed at the thinner end of the blade, and was drawn towards the worker's body, not pushed away from it.

The *hammers* used for masonry by the Syrians of to-day are very various; those used by carpenters (who never use a wooden mallet) are much like European ones. The modern Syrian uses the bow drill for boring holes in wood, and it is likely that this, too, was anciently employed The bowstring is twisted round the spindle of the drill, which is then turned by the movement of the bow. The most useful tool in the Syrian carpenter's hands is the *adze*, which serves the purpose of hammer, chisel and plane in one. It is a cutting tool something like an axe, but with the blade placed at right angles to the handle, to which it is fastened with thongs. The blade is shaped to a curve more or less in line with its sweep through the air when wielded.

We can thus form some idea of the tools used in the carpenter's shop at Nazareth, and an early Christian writer, Justin Martyr, writing about A.D 150, preserves an interesting tradition about its output

He says of our Lord, "He was in the habit of working as a carpenter when He was among men, making yokes and ploughs" (*Trypho* 88) So we can link these days of carpentry with one of the most famous sayings of His ministry It is the conscientious and expert fashioner of yokes for the necks of the oxen of Galilee who exclaims. "Take my yoke upon you, and learn of me, for I am meek and lowly in heart and ye shall find rest unto your souls. For my yoke is easy, and my burden is light" (Mat. xi. 29, 30).

Nazareth.—Outside the home, school and the carpenter's shop circled the out-door life of the child Jesus and the younger children of that Nazareth home—"James and Joses and Simon and Judas" and their unnamed sisters And the education of a naïve out-of-doors life perfected and completed that of the lessons learned in-doors.

The mean climate of Nazareth is moderate, though the heat is intense in July and August and there is occasional snow in winter. The sun shines for the greater part of the year, and the genial conditions invite to an open-air life. In Gospel times the extremes of climate were doubtless less

rigid they have been intensified—as they always are—by centuries of deforestation

The village of Nazareth stands on a spur of the Lebanon range, where it drops into the fertile plain of Esdraelon. The neighbouring valleys are full of rich vegetation in the spring—gay with wild flowers, and with the foliage and blossoms of fig, olive, mulberry, lemon, pomegranate and quince

Modern Nazareth stands 1,600 feet above sea level, and the ancient town was probably higher still, and by its situation was wonderfully calculated to open the minds of its young denizens. It was in Galilee, a district where the population was more cosmopolitan and much less narrow-minded than that of Judah farther south, and it was secluded enough for quiet and meditation No "main artery" road passed through it

Yet though thus "out of the hurly-burly," Nazareth was a marvellous observation point. From the ridge above the town—the precipice down which His infuriated countrymen once tried to hurl Jesus (Lk iv. 29)—you could see far distances, and trace all the main features of the Holy Land. The mind would dwell on the ancient struggles of Deborah and Barak on the battle field of Esdraelon (Jud. iv and v), and the dramatically chequered history of Ahab's rule in Samaria with the ministries of Elijah and Elisha (1 Kgs. xvi ff), or the tramp and counter-tramp of Egyptian, Assyrian and Babylonian armies, so fatal to Samaria and to Jerusalem.

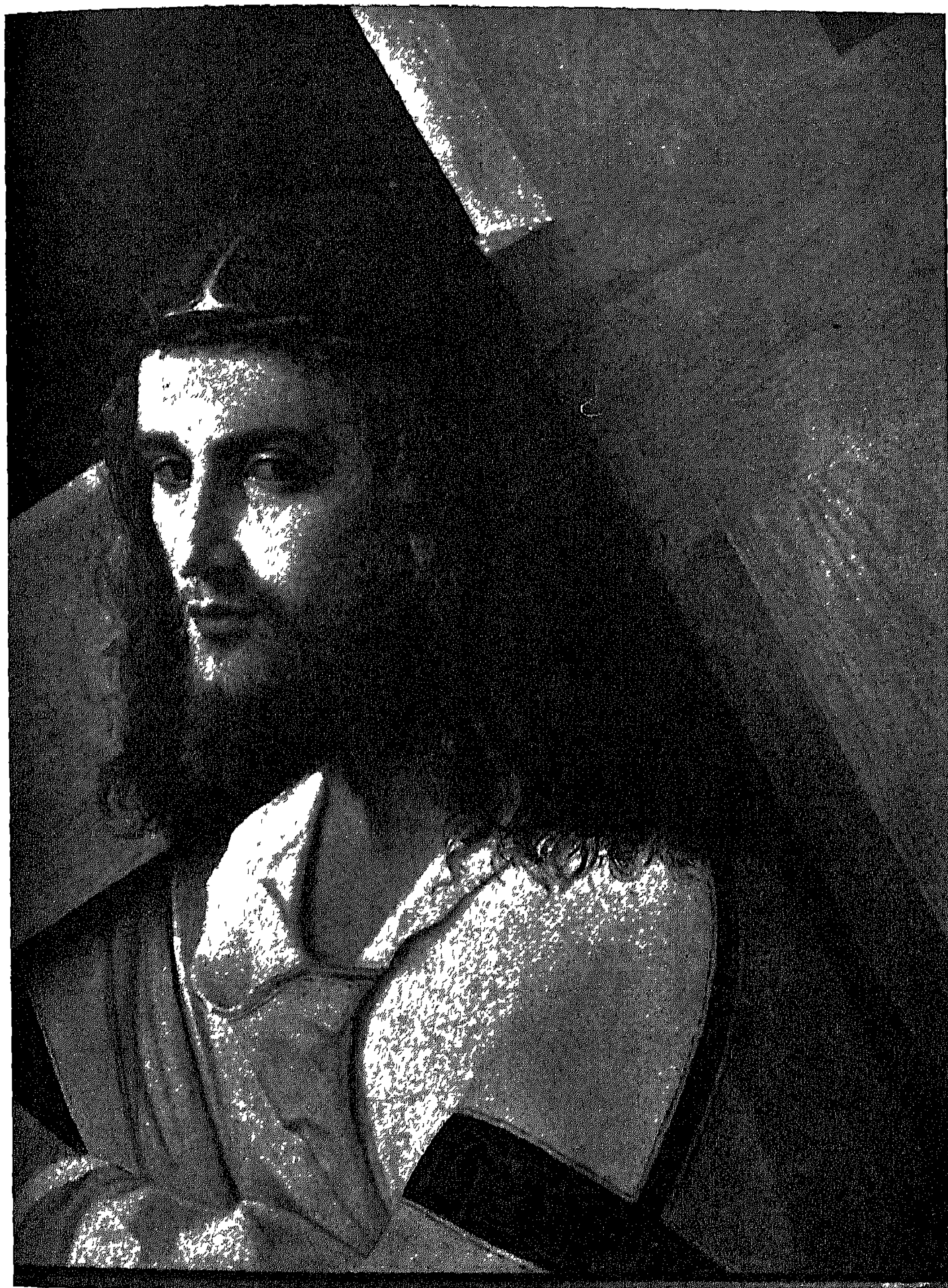
The highroad by which these hosts had passed was also the great way of transport in the first century, and the young Nazarene from His hilltop could watch all the important traffic passing southwards to Jerusalem: Jewish pilgrims, Arab caravans, Roman legions, princes' retinues These left their impress on the youthful mind, as did the sights of nature.

Scenes on the Highroads.—From this point the boy could watch "crowds," and learn a "compassion" for them that was to bear fruit in the miracle of the loaves He could see eager merchants passing with their treasures, and find a text for the parable of the *Pearl of Great Price* He could see the weary, the footsore, the lame; could watch the blind straying sideways into the ditch, and draw in His mind a parallel with incompetent religious teachers (Mat. xv. 14), and learn that pity for all cripples that marked His ministry, and the special sympathy for the helplessness of those whose "light was darkness", a sympathy which was for more than one blind beggar the recovery of his sight.

He could witness the curious custom by which subjects could be "pressed" into the service of an official, and made to change their course and accompany him to his destination, and He drew from it a characteristic lesson (Mat. v. 41). He could see—only too often—the passing of a tragic criminal procession: a file of the condemned escorted by Roman soldiers, and bearing upon their backs the instruments of their own execution And in after life it came to Him as a familiar thought that the "Son of Man" must "take up His cross," and His true followers daily do the like (Lk. ix. 23).

He could see kings and their retinues passing along in their "soft raiment" and dazzling uniforms, and could turn from such artificial splendour and affirm that "Solomon in all his glory" was not arrayed like the "lilies of the field"

Sights of Nature.—The wild flowers of which He speaks were certainly not "lilies" in our sense. The most probable claimants are the gorgeous pink and purple gladiolus that grows rank in the cornfields, and the beautiful iris that spangles the meadows in March. These flowers, with the blossom of spring, the bright green fig leaves that herald the coming of summer (Mat. xxiv 32) and the harvest, and the fruits of autumn, embroider for Him a world which His Father had made, and over which the Father's unfailing providence brooded The perennial miracle of sunrise and sunset, with its



From the painting by Giorgione] [*Photo. Anderson.*

CHRIST BEARING THE CROSS

practical warnings to the field worker, completed the colour scheme. "When it is evening, ye say, It will be fair weather: for the heaven is red. And in the morning, It will be foul weather to-day: for the heaven is red and lowring" (Mat xvi. 2, 3).

The landscape itself was full of interest, and not least those picturesque hill towns among which Nazareth itself must be numbered—a very familiar sight in modern Italy too—which put into His mind the thought "A city set on a hill cannot be hid" (Mat. v. 14)

The birds for whom God provides resting places, as He furnishes holes for the foxes (Lk ix 58), the ravens whom He feeds (Lk. xii. 24), the eagles, or vultures, that assemble from afar when a corpse invites (Mat. xxiv 28), the crows which follow the sower, and snatch up the exposed grain (Mat. xiii. 4); the little sparrows that are sold so cheap in the market (Lk. xii. 6), are all recruited to enforce religious lessons.

So, too, He uses His observation of the domestic animals: the ox and the ass that must be watered even on the sabbath (Lk xiii. 15), and must be rescued at once if they fall into a pit (Lk. xiv. 5), the sheep and the goats that the shepherd pastures—He had watched him separating the one from the other (Mat. xxv. 32); all these are stored up in His memory, and emerge later in His wonderful teaching.

So, too, He speaks of the processes of agriculture—ploughing, sowing, reaping, gathering fruit, pressing oil and wine.

Town Sights.—To these we should add the sights of the market and the street, the tolls that have to be paid (Mat. ix 9); the "salutations in the marketplaces" (Mat. xxiii. 7); the bargaining, swearing and lying that go on there (Mat v 33, 37); the measuring of grain (Lk. vi. 38), and not least the children's games.

Jesus describes (Mat. xi. 17; Lk vii. 32) the attitude of the official Jewish leaders towards Himself and John the Baptist as like that of sulky and ill-natured children who "refuse to play." "We piped unto you, and ye did not dance; we wailed, and ye did not mourn" (Mat. xi 17) say their disappointed companions. They are playing at weddings and funerals These memories are blended with those of many a gaudy and striking wedding procession passing through the streets of Nazareth, and make the wedding and its feast figure largely in His parables (Lk. xii. 36; Mat. xxii. 1-14)

VI. COSTUMES AND CUSTOMS OF PALESTINE

Costumes.—The costumes of Palestinian people in the first century were very like those still worn in the twentieth. The vesture of the body, in loose flowing robes, with a girdle at the waist in which they are "girded up" at the loins (Lk. xii 35) when active work is to be done, comprised ordinarily only two or three items —

(*a*) A "linen cloth" as it is called in Mk. xiv. 51 (SINDON)—a simple garment worn next the skin: a long piece of cloth, with ends sewn together and holes for the arms, or sometimes shaped more or less to the body. This was of fine linen and worn by the well-to-do.

(*b*) The "tunic, or shirt" (CHITON) worn by the peasants to-day. It is a long flowing garment like a dressing gown, of striped or bright coloured cotton or linen, folded over and caught at the waist by a girdle—belt,

or cord, or sash. It has slits at the sides, to ease the movement of the legs in walking. This was worn by both sexes.

(*c*) Over the tunic the peasant or poor man wore the heavy "cloak" (HIMATION), a warm garment made of goat's or camel's hair—by modern Arabs worn with perpendicular stripes of brown and white or blue and white. Its construction is very simple and does not suggest the gracefulness that characterises it when worn. A piece of cloth 7 feet long and 4½ feet wide is taken longways, and the two ends folded in, 1½ feet each side, and then sewn along the top. Two holes are then cut in the top corners, through which to pass the hands and wrists. Thrown over the neck and back it makes a very picturesque robe. It is the peasant's and shepherd's outer garment for cold and wet weather, and he throws it over him as a coverlet when he sleeps: "If thou at all take thy neighbour's garment to pledge, thou shalt restore it unto him by that the sun goeth down: for that is his only covering, . . . wherein shall he sleep?" (Ex. xxii 26, 27).

(*d*) The wealthier classes wore over the shirt or tunic (*b*) a more dignified garment than the cloak just mentioned, which we may call the "robe" (STOLÉ). (From the fact that Jesus forbids His disciples on their journeys to wear more than one tunic (Lk. ix. 3) it is argued that the wealthy sometimes wore two.)



PEASANT WEARING THE TUNIC (CHITON)



ARAB WEARING THE CLOAK (HIMATION)

Like the shirt, this robe has the shape of a dressing gown, only with wider sleeves; and it is not caught by a girdle, but hangs straight down. The robe is often rich in colour and material: it is the "long robe" in which the Pharisees love to preen themselves (Lk. xx. 46), and the "best robe" which the forgiving Father brings out to honour the Prodigal Son (Lk. xv. 22).

(*e*) We should mention here the short heavy waistcoat of sheepskin which the shepherd wears—with the fleece sometimes

outside, sometimes inside—over which, in wet, rough or bitter weather, he will throw his heavy cloak (*c*).

To complete the out-door dress: the feet were shod with sandals—soles of leather, wood, or matted grass, furnished with loops through which passed the thongs of the "shoe-latchet," a thong passed between the great toe and the other toes and round the ankle. It was a servant's business to "stoop down and unloose" this thong (Mk. i. 7) when a guest entered a house; he then removed the shoes, and washed the guest's feet. It is clear, however, from the Assyrian monuments, that in early times Jews wore shoes as alternative to sandals. To go about barefoot was a sign of mourning.

A turban of cloth over a skull cap and fez next to the shaven head, is wound round in many folds protecting the eyes and the nape of the neck from the fierce Palestinian sun. This doubtless represents in essentials the ancient headdress.

The woman's dress, then as now, was almost exactly like the man's, except for the headdress. The dress would consist of the long shirt and girdle, with a large veil of white cotton, or of black or coloured silk. Instead of the man's heavy cloak a "mantle" was worn—the colours to-day are white or indigo. It is this mantle that Ruth holds out to Boaz, who pours into it six measures of barley (Ruth iii 15), and in the present day Eastern women use it as a bag for carrying home their parcels, vegetables or fruits.

We can picture our Lord and His disciples as they move about clad in the turban, shirt and cloak, now "girded up," now with garments flowing. If we try to identify the "coat" (Jn xix. 23) "woven without seam from the top throughout," we face some discussion: but the balance seems in favour of the "cloak" (*c*) as the garment for which the four soldiers cast lots. Of the other four items—shirt, girdle, turban and shoes—they would each take one.

Births.—St Luke devotes a good deal of space to the birth of Jesus, and of His cousin and forerunner John the Baptist This is perhaps the more natural because of the unique importance which he evidently attaches to these events, and because (as we know from Col. iv. 14) the evangelist was himself a physician. But it is clear from many passages in the Old Testament (e g. Ps. cxxvii. 3-5) that the possession of children was highly valued among the Hebrews, and that childlessness was considered a reproach (1 Sam. i 4 ff ; Lk i 25).

An expectant mother was careful in her diet—as we see from the case of Samson's mother (Jud xiii. 7)—and secluded herself, as far as possible, before the event (Lk i. 24). As soon as the child was born it was bathed in water, rubbed with salt, and wrapped in "swaddling clothes" (Lk. ii. 7, 12): probably, as now, a square cloth wrapped round its little body, and held in place by bandages. On the eighth day, if a boy, he was circumcised, and given his name (Lk. i. 59; ii. 21), and this was an excuse for mustering the friends and neighbours.

The mother was secluded as "unclean," for forty days after the birth of a son, for seventy after that of a daughter, by the law (Lev. xii.). This ceremonial ordinance was also obviously beneficial to her health. When "the days of her purifying were accomplished," she appeared in public for what we should call her "churching," and made her offering in the temple. If she were rich, the sacrifice ordained was a first-year lamb and a dove or pigeon, if poor, "two turtledoves, or two young pigeons" (Lev. xii. 6 and 8). Thus the narrative of St. Luke (ii. 22-24) emphasises the poverty of Mary and Joseph It was for ceremonies like these that the traffickers in the temple "sold doves" to intending offerers (Jn. ii. 16, Mat. xxi. 12), and from this traffic the High Priest's family reaped considerable wealth.

In the East the mother suckled her child much longer than with us—for two, three or four years before it was weaned. This explained how Samuel could be left with Eli at once after his weaning (1 Sam. i 24).

Family Life.—The families of which we learn most in the Old Testament are those of the kings of Judah, who were polygamous they must have supported immense establishments of women and children.

Abraham, as we know, had two wives; and though monogamy was clearly the highest ideal from the first (Mk x. 6-8), there can be no doubt that for many centuries the richer Hebrews kept such composite establishments. The poor man would have only one wife; and monogamy seems to have been practically universal by the age of the New Testament, though *in theory* polygamy was lawful. It is not polygamy, but divorce for inadequate reasons, that our Lord denounces. And in those days one school of thought among the Rabbis was so lax that, making its own interpretation of the vague pronouncement of Deut. xxiv. 1, it allowed divorce for an ill-cooked dinner!



From the painting by Sir Joshua Reynolds —National Gallery] [*Photo W F Mansell*

THE INFANT SAMUEL KNEELING IN PRAYER

Certain of the features of Old Testament family life remained, and notably the great prominence given to the widowed mother of the head of the house (see 2 Kgs. *passim*), who lived on in the home after her husband's death. The wife's mother had also, sometimes, her rôle in the household In St Peter's home at Capernaum (Mk. i 30, 31) she evidently holds an important position; and it is noticed as evidence of her sudden recovery from fever, that she was able at once to share the hostess' function of serving the guests. To the mother were entrusted the domestic duties—the feeding, clothing, etc., of the family, and the care and education of her daughters up to the time of their marriage. How honourable these duties were considered is evident from the last poem in the Book of Proverbs, in praise of the virtuous woman "A virtuous woman who can find? For her price is far above rubies The heart of her husband trusteth in her" (Pr xxxi. 10-31)

The father was supreme in the family, with special reference to the upbringing of the sons (cf. Pr. iii. 12, iv. 1 ff). The Jewish father, however, though his severe chastisement was taken as a matter of course, had not the *patria potestas* of the Roman father, which made the latter *owner* of his family, with power of life and death over the children. But provision was made in the law (Deut. xxi. 18-21) for the public stoning to death of an incurably disobedient son.

Betrothal and Marriage.—It may be noted that in Church of England weddings, as in those of the Roman Church, there are really two ceremonies (1) the betrothal (by giving and receiving of a ring) and (2) the marriage proper, with its benedictions. This is an ancient distinction, and in New Testament

times the two ceremonies were quite separate. The betrothal that comes before us in the Gospels is that of Mary and Joseph (Mat i 18; Lk. ii. 5). The Eastern girl, like the French maiden of to-day, is allowed very little say in the choice of her husband, which is arranged by the family, though not without the consent of the parties themselves. So Abraham arranges with Laban for the betrothal of Isaac and Rebekah (Gen xxiv.); and Esau's choice of his own wives is regarded as tiresomely abnormal (Gen. xxvii 46).

The betrothal was an important ceremony, and seems to have consisted of two parts:

(1) There was the *settlement of the dowry*, and the payment, or part-payment, of the same. This dowry was at first a sum paid to the family as the price of, or compensation for, the bride (cf. Gen. xxxiv. 12), though later it was apportioned to the bride herself.

(2) Secondly, there seems to have been a formal *setting of questions*, like that put to Rachel (Gen xxiv 58)—"Wilt thou go with this man?"—and some form of benediction. In the Talmud, provision is made for the giving of a ring or other article of value to the bride-to-be, with the formula "By this ring may she be betrothed to me." It is not certain whether this would have figured in the betrothal of Joseph and Mary, or whether the custom is a somewhat later one.

The betrothal meant more than in the Greek and Roman law of the time, where it was just a promise After betrothal the two were bound to each other, and if the man wished to break his contract he must divorce the woman, if she were unfaithful to him it counted as adultery (Deut. xxii. 23, 24). This is the situation contemplated by Joseph in Mat. i. 19 Probably this was all that happened in early times: the bridegroom just took his bride into his own house or tent (see Gen. xxiv. 63-67) But in New Testament times there followed the wedding, at a longer or shorter interval.

The wedding and its feast figure largely in the Gospels, and loomed large in the life of the neighbourhood then as now It seems to have involved, however, no religious ceremony. The bridegroom wore his best clothes, and a garland on his head (Is. lxi. 10). The dressing of the bride was a great ceremony. She was "adorned with her jewels" (ib.), and clad in long, flowing robes of rich attire, with a long train (Jer ii. 32; Rev. xxi. 2), with a special sash, and a crown, and a large veil which she never removed from her face till the ceremonies were over and she was alone with her husband. (This explains how, in Jacob's marriage, the crafty Laban was able to substitute the elder sister for the younger—Gen. xxix 21-25)

The wedding ceremonies consisted of (*a*) the procession, and (*b*) the marriage feast

(*a*) *The procession* The bridegroom and his friends, called in the Gospels "the sons of the bridechamber" (Mat ix. 15, Lk. v. 34), march to the home of the bride. There they are joined by the bride with her parents and friends, who together conduct the pair to their future home, to the accompaniment of music and merriment.

It is not exactly this procession, though a similar one, that is described in the parable of the *Ten Virgins* (Mat. xxv. 1-12). There, apparently, the bride has already been conducted to her future home, and the bridegroom has gone off, presumably to visit a relative of importance When his arrival at the home is imminent the maidens in waiting go out a little way to meet him, with torches and lamps to light him on his way, and with him enter into the house for the wedding feast.

(*b*) *The wedding feast.* This counted for so much that in the Gospels it is sometimes identified with the marriage It was indeed an outstanding event in the family life, and no expense was spared

The parable of the *Wedding Feast*, in Mat. xxii. 1-14, gives an elaborate picture of such a feast in the highest circles, where the invitation is a "royal command," and the hospitality widespread, and includes even the provision of "wedding garments."

The narrative of the marriage at Cana in Jn. ii shows us a wedding feast in the



From the painting by Raphael] [*Photo W F Mansell*

THE SAN SISTO MADONNA

humbler circles in which the Blessed Virgin moved. The "friends of the bridegroom" were highly honoured guests, and one of them (cf. Jn iii. 29) was chosen to act as master of ceremonies. He it is who figures in that narrative as "ruler of the feast"

In modern Palestine the festival lasts, among peasants, for a whole week, during which time wine is freely broached, and the bride and bridegroom, resplendent in their bridal attire, are treated as royal personages.

Death and Burial.—When a death took place the relatives closed the eyes and wrapped the body either in its own clothes or in special linen wrappings, with unguents and spices (Jn. xix. 39, 40). So the body of Jesus was wrapped (Mk xv. 46, xvi. 1), with a special napkin swathing the head (Jn. xx. 7), and so, too, was Lazarus of Bethany "bound hand and foot with grave-clothes" (Jn. xi 44) As among southern and eastern peoples to-day, friends and neighbours congregated in the house as death drew near, and raised cries of lamentation. The scene in the house of Jairus is typical: "And they come to the house . . . and he beholdeth a tumult, and many weeping and wailing greatly . . . he saith unto them, Why make ye a tumult, and weep?" Women as professional mourners took a prominent part, both in the house and in the procession to the grave, enforcing their cries by beating tambourines.

As soon as practicable the funeral left the house and bore the corpse on an open bier (a litter or stretcher with poles for handles) to the grave, which would be outside the town or village Here would be seen family friends and hired mourners in sombre garments, the women with dishevelled hair, sometimes with their clothes rent and ashes on their heads We can so picture the scene at Nain, where Jesus accosts the mother, and touches the bier (Lk vii 11-17).

The grave was sometimes, as with us, a hole dug in the ground, but more often a rocky cave adapted to the purpose.

From the earliest times the Hebrews were accustomed to bury in the caves which abound in their country. Abraham bought the cave of Machpelah (Gen. xxiii. 9) for a family sepulchre, and Isaiah gives us a picture (xxii. 16) of a rich man preparing for himself a tomb hewn out in a high rock, and carved. There are hundreds of specimens of such sepulchres to be seen round Jerusalem to-day, some of them dating from New Testament times, with sculptured architraves and columns. Sometimes a natural cave was used, as apparently in the case of Lazarus (Jn. xi 38): sometimes, as in the case of the tomb of Joseph of Arimathea (Lk. xxiii. 53) where he laid the body of Jesus, a good deal of mason's and sculptor's work went to the making of it. In either case a large stone was used to block the entrance.

The Holy Sepulchre.—Scholars are still discussing where exactly was this tomb—whether on the site where the church that bears its name was erected nearly three hundred years after, or in some other place. But if we cannot identify the site, we have a remarkably full description of the tomb.

It was in a garden (Jn. xix. 41) and hewn out of the rock (Mk. xv. 46). The door of entrance to such tombs is usually small, about 3 feet by 2 feet; so it was that Peter's companion had to stoop down to look in (Jn xx. 5). The entrance was blocked by a heavy stone, called *golel* or "roller," like an upright circular mill stone, with a diameter of some 3½ feet, and a weight of six hundredweight It moved in a narrow groove, excavated in the rock for the purpose—the groove slanting upwards on each side, so that the stone naturally gravitated to its place in front of the orifice. We can well understand the women's question: "Who shall roll us away the stone?" (Mk. xvi. 3). For such a stone might need two or three men with levers to shift it up the incline, and wedge it in position.

In front of such tombs there is usually a cleared level space or court, and the



From the painting by Rubens] [*Photo J E Bulloz, Paris*

THE DESCENT FROM THE CROSS

interior is comparatively spacious. In the tombs which have this rolling stone as door, the interior usually has little shelves cut into the rock, like the *loculi* in the Roman catacombs, or tunnel-like holes driven into the rock face at right angles. The tomb of Jesus must have been of this former kind because the women saw two bright figures "sitting one at the head and one at the feet where the body . . . had lain" (Jn. xx. 12). We can parallel the "sealing" of the tomb (Mat xxvii. 66) from ancient Egypt, where the tombs were sometimes sealed. A cord would be drawn across the *golel* and the ends fixed with wax or soft clay on which the seal was impressed.

VII. THE SEA OF GALILEE AND THE FISHERMAN'S CRAFT

Geographical Situation.—The Sea of Galilee (also called the Sea of Tiberias and the Lake of Gennesaret) takes a very central place in the Gospel story, both at the beginning of our Lord's ministry and after the resurrection. It is a fresh-water lake formed by the enlargement of the river Jordan in a harp-shaped cup amid the Galilean hills, some nine or ten miles below a smaller lake, known as Huleh, and little more than twenty miles from the river's source

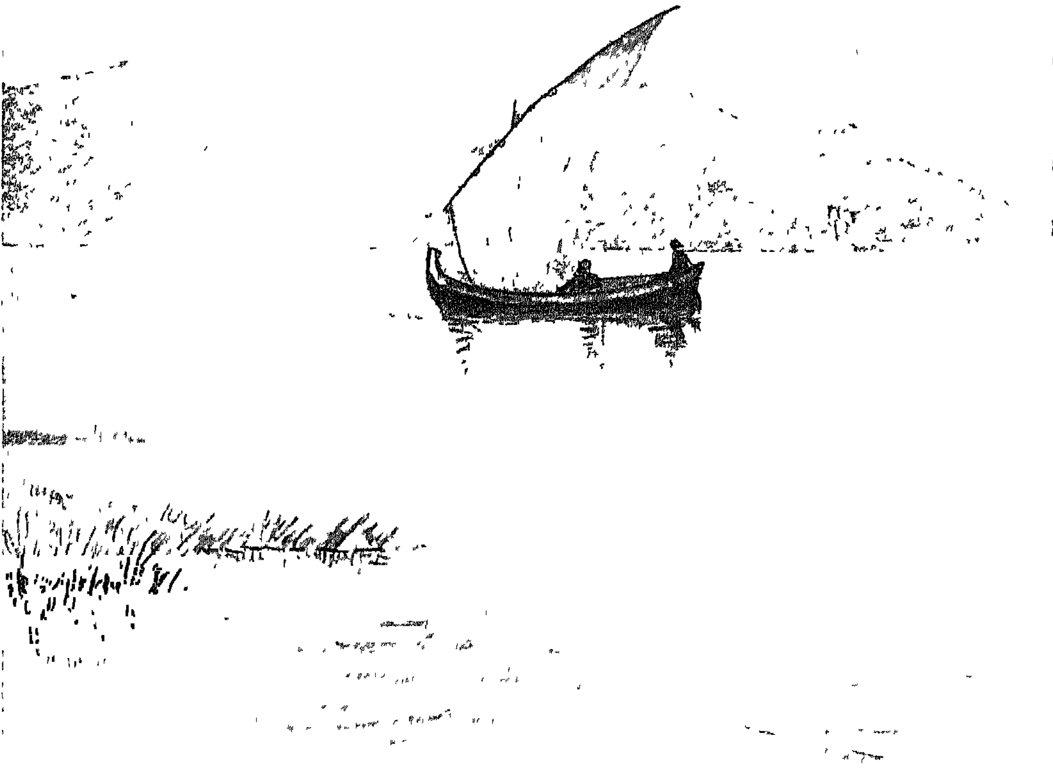
In the short distance between lake Huleh and the Sea of Galilee, Jordan descends no less than 673 feet: and the surface of the latter lake is 680 feet lower than that of the Mediterranean, from which it is separated by twenty-five miles of hill and dale. Through this lake the river Jordan flows, entering on the north and emerging on the south, much as the river Rhone flows through the Lake of Geneva.

The lake is thirteen miles long, and, at its widest, eight miles broad. It lies in a deep trench among rocky hills, largely volcanic in structure. At the points where Jordan enters and emerges the hills recede somewhat, and there are small flat and fertile valleys; in the northern one stood Bethsaida, and in the southern the flourishing city of Taricheae—not mentioned in the New Testament, but very prominent in the writings of Flavius Josephus, who has much to say about this region, where he fought against the Romans in the latter half of the first century A.D.

Near the north-west corner of the lake where two streams flow in from the mountains of Upper Galilee, there is a still larger expanse of fertile land—perhaps the most fertile in all Palestine—known anciently as the plain of Gennesaret. From this, the lake derived one of its alternative names. The plain is some three miles long by two miles wide. On its south-western edge stood Magdala (called Dalmanutha in Mk. viii. 10), the home of Mary Magdalene, and at its north-eastern corner, at Khan Minyeh, some would place the site of Capernaum; while others identify that city with Tell Hûm halfway between that and the point where Jordan enters the lake.

Behind this plain, and behind the northern coast where Tell Hûm is situated, the hills slope up rather more gently from the lake; but elsewhere the cliffs and precipices rise steeply from the waters: on the east to 1,700 feet and on the south-west to 1,400. Gullies between the precipices form channels for the winds, and now, as of old, sudden storms are liable to "sweep down" upon the lake.

Lakes among the mountains are proverbially treacherous. The writer once nearly met his death in an open boat on Lago Maggiore, in a storm which took the expert boatman unawares The narratives of the



BOAT ON SEA OF GALILEE

two storms (Mat. viii. 24-27 and xiv. 24-33) give us a vividly true picture of the rapidly changing moods of the Sea of Galilee.

In New Testament times the shores of this lake—for centuries since desolate and fever-stricken—teemed with a busy life, as they will doubtless do once more a generation hence. The great highroad running from Damascus to Jerusalem, Gaza and Egypt—an immemorial caravan route that had lately been improved by the Romans—touched its north-western shore, traversing the plain of Gennesaret and mounting the hills again at Magdala Another road to Jerusalem skirted the western shore, passing through Tiberias, the imposing city which Herod Antipas had built for himself on the site of ancient tombs, and named after the Emperor Tiberius (This is the only site round the lake which has been continuously inhabited all through the centuries) The road then passes on along the coast past Taricheae at the southern end. Yet a third road ran from Bethsaida, under the precipices of the eastern shore, and joined the Tiberias road a little south of Taricheae.

The early days of the ministry of Jesus were not spent, as we sometimes think, in a rural backwater, but in a busy and populous

centre where much business was transacted, and visitors of every type and race were to be found in large numbers. Rich Jews and Gentiles frequented the shores of the lake, though the former studiously avoided Tiberias as unclean, because of the tombs beneath it. Doubtless the wealthy had their villas there, like those which fringe the Italian lakes to-day It had then eight or nine flourishing towns on its banks besides Tiberias, and not far from that city were famous hot medicinal springs, still frequented by visitors from all parts of Syria in June and July In New Testament times there was a much better appointed watering-place, attracting invalids from far and near; a fact which may partly account for the great crowds of sick people mentioned as waiting upon Jesus in the early days of His Galilean ministry (Mat. iv. 23, 24; viii 16; xiv. 14; Mk i. 32, etc)

Gospel Sites.—The sites of some of the places mentioned in the Gospels are still disputed, and about that of Capernaum, as we have seen, there is still discussion. Names cling in the East, and "Kefr Nahum" (the village of Nahum) might well be corrupted to Tell Hûm (the hill or mound of [Na]hum). On the other hand Khan Minyeh, situated on the great caravan road, suits best the evident importance of the town in the first century, suggested, e g. by the "pride of place" evident in our Lord's exclamation: "Shalt thou be exalted unto heaven?" (Mat. xi. 23). The town where Jesus made His temporary home, and where we find Peter living with his wife's mother (Mk i 29, 30), would be one of the greatest strategic centres in the neighbourhood, and would give marked importance to Matthew's post of revenue officer there (Mat. ix. 9).

On the other hand, Bethsaida, the birth-place, apparently, of Andrew and Peter and Philip (Jn. i 44) and presumably of the sons of Zebedee, can be placed with certainty at the north-east corner of the lake, near where the Jordan enters It seems to have been a large fishing village adjoining the smart new city built by Herod Philip (who also founded Caesarea Philippi, the scene of Peter's great confession—Mat xvi. 13–16), and named Bethsaida Julias out of compliment to Julia, Julius Caesar's daughter

Another important site which has been pretty certainly identified is the point on the east side of the lake where our Lord encountered the demoniac "Legion," and where the herd of swine rushed over a precipice into the sea (Mk. v. 13). Of the various readings of the name—Gadara, Gergesa, Gerasa—the last seems on textual grounds correct; and this is still represented to-day by Khersa, the ruins of which can be seen across the lake from Tiberias as a little dark spot at the mouth of a gully near by, midway along the eastern shore Here are still to be found on the heights such "tombs" as were haunted by the demoniac (Mk. v. 3), and here alone the precipice falls down quite sheer into the lake.

The traditional scene of the *Sermon on the Mount* (Mat. v.-vii.) and, near to it, that of the *Feeding of the Five Thousand* (Mat xiv. 13-21) lies on the slopes of a double-peaked mountain called Karn Hattin (Horns of Hattin) on the western side, behind Tiberias It is approached by the ancient caravan route, where, leaving the lake at Magdala, it winds up the gorge of Hamân (The Pigeons) past some famous robbers' caves which the soldiers of Herod the Great could approach only in great baskets lowered from the top of the cliffs.

The "Chorazin" coupled with Bethsaida and Capernaum in our Lord's denunciation is undoubtedly Kerâzeh, the ruins of which lie due north of Tell Hûm, an hour's walk up in the hills. "Woe unto thee, Chorazin! woe unto thee, Bethsaida! for if the mighty works had been done in Tyre and Sidon which were done in you, they would have repented long ago in sackcloth and ashes" (Mat. xi 21).

Shipping and the Fishing Industry.—For many centuries heavy taxation made fishing on the Sea of Galilee unprofitable, and very

few fishing boats were ever seen there by nineteenth century visitors In New Testament times, as is clear from the Gospels (e g. Jn. vi 23, 24), but still more evident from the narrative of Josephus, the lake must have been constantly studded with sails. and those not only of fishing boats, but also of pleasure craft and even of ships of war. He tells how when fighting against the Romans he collected as many as two hundred and forty ships from the neighbourhood of Taricheae alone; and later on speaks of four thousand to six thousand people slain after taking refuge on board of ships.

We have no contemporary description of the boats that would be used by Peter and Andrew and James and John, but we may probably conclude that they were much like the few that still plied upon the lake in the nineteenth century quite small craft rigged each with a lateen sail—a sail shaped, as has been said, "like a bird's wing" Similar sails are also to be seen on the lakes of Europe, in Switzerland and Italy.

There are fifty-three different species of fish in the lake, of which fourteen are peculiar to it and the Jordan. Carp, dace, loach, bleak and blenny abound.

The methods of catching fish are various, and three are mentioned or implied in the Gospels.

(1) *Angling, with a hook.* In the passage about the Temple tribute (Mat. xvii 27), Jesus says to Peter: "Go thou to the sea, and cast a hook, and take up the fish that first cometh up"

(2) *The casting net* At the moment of the call of the first disciples we read (Mk. i. 16): "And passing along by the sea of Galilee, he saw Simon and Andrew . . . casting a net in the sea, for they were fishers." It was no doubt a picturesque sight. This net was circular in form, and loaded with leaden weights round the edge, and having a cord attached to the centre. "When the fisherman throws this net he gathers it up in folds on his arm and, with a peculiar swing of the arms, only to be learnt by long practice, flings it so that it spreads out and falls in its circular form upon the surface of the water It rapidly sinks to the bottom, the loaded circumference causing it to assume a cuplike form, enclosing within its meshes all the fish that happen to be under it when it falls. When it has reached the bottom, the fisher cautiously hauls in the rope so that the loaded edges gradually approach one another, and by their own weight cling together and prevent the fish from escaping as the net is drawn slowly ashore."

This requires a keen eye, an active frame, and much patience and initiative

(3) *The drag-net.* This is named in the parable of the *Good and Bad Fishes* "Again, the kingdom of heaven is like unto a net, that was cast into the sea, and gathered of every kind· which, when it was filled, they drew up on the beach, and they sat down, and gathered the good into vessels, but the bad they cast away" (Mat xiii. 47, 48). This is like the seine still in use in many different waters, and has been described as "a long woven wall," with "corks attached to the upper edge to keep it at the surface, while the lead weights at the lower edge cause it to sink till the net stands upright in the water It is taken to sea in two boats, and when "shot" is extended in a line with a boat at each end. The two boats then gradually approach each other so as to bring the net into a semi-circle, and finally the two ends are thus at length brought together to the shore, and the net is hauled in, enclosing the fish within its woven walls." Naturally such a net does not discriminate, and when the haul was displayed upon the beach, Jewish fishermen would find it necessary to throw away many specimens of species forbidden by the Levitical law. How often must the two boats of the "partners" (Lk. v. 7) Simon and Andrew and the Sons of Zebedee, have performed this evolution!

(4) *Fish spearing* Still another form of fishing may be alluded to when Simon says (Lk v 5) "We toiled all night. . . ."

Fish spearing is commonly practised during the night, the fishes being lured by the flare of torches

Fishing was a poor man's craft, though Zebedee seems, from the mention of "hired servants" (Mk. i. 20) to have been an employer of labour. In choosing fisher folk for His first disciples, Jesus was attaching to Himself men hardy, modest, straightforward, patient and full of resource· and the result showed that they were well fitted to become "fishers of men" (Mk. i. 17).

VIII. THE FARMER'S LIFE—SHEPHERDING.

Shepherding on the Hills.—If we are to consider the various types of farming which formed the staple industry of Palestine in Bible times, we must remind ourselves of the three main zones into which the land is divided:

(*a*) the limestone hills and uplands—the shepherds' region;

(*b*) the foothills and lateral valleys, where flourish vines, olives, figs, etc.;

(*c*) the great maritime plain—the grain-producing area.

The hills of Galilee, that fringe the Lake of Gennesaret, Carmel and the hills of Samaria, and above all the great range that flanks the Jordan valley westward, running south through the lands of Ephraim, Benjamin and Judah, form the scene of the shepherding so prominent in the Old Testament and the New that it is mentioned over five hundred times in the Bible.

The nearest equivalent that we have at home is to be found in the hill pastures of Wales and of the Lake District

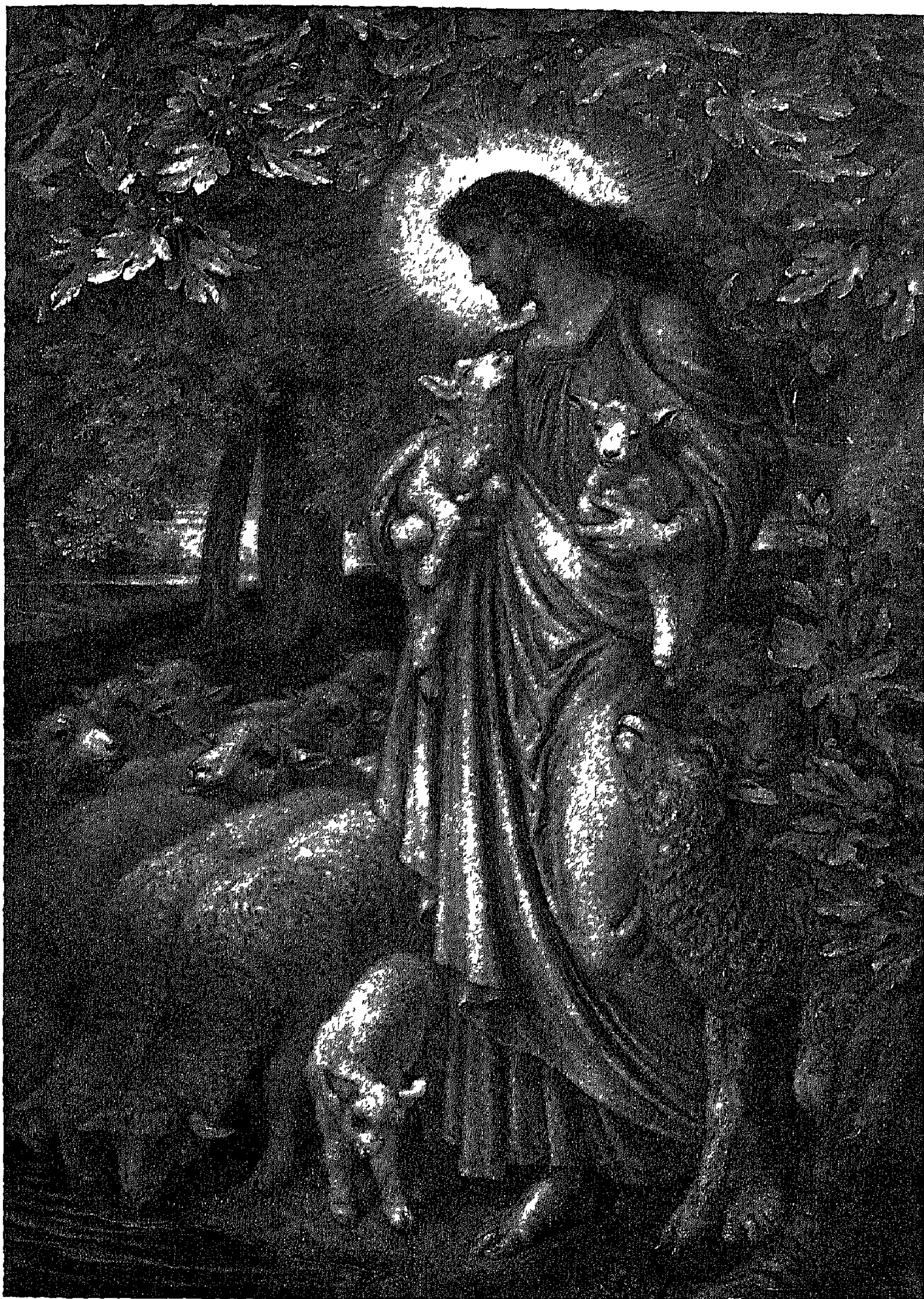
The Hebrew patriarchs, Abraham and his descendants, as we know from the Book of Genesis, were nomad owners of great flocks and herds; and the Israelites under Joshua, several centuries later, reoccupied the uplands where their ancestors had roamed

David, the great national hero, later still, began as a humble shepherd boy, tending in the "hill country of Judea" his father's flocks, andended as a "shepherd of people," ruling over Palestine as king. So shepherding looms large in Hebrew life and literature. The king is symbolised as shepherd; the prophets—especially in Ezekiel—are shepherds, above all, God is the shepherd of His people. "The Lord is my shepherd; I shall not want" (Ps. xxiii.).

This religious symbolism is carried on in the New Testament, as in the "pastoral charge" of Jesus to St. Peter by the lake. "Feed my lambs—Feed my sheep", and again where Jesus describes Himself as the "Good" or "Ideal Shepherd," or is described by the Baptist as "The Lamb of God."

The background of all this symbolism becomes the more vivid for us because we are able to reconstruct, often in the minutest details, the shepherd life of Bible times.

The Biblical Shepherd.—We can picture the shepherd leading the rough life of privation to which all the population were subjected in times of grave persecution; as vividly described in the Epistle to the Hebrews· "they went about in sheepskins, in goatskins; . . . wandering in deserts and mountains and caves, and the holes of the earth" (Heb. xi. 37, 38). So Jacob (Gen. xxxi 40) vividly describes the risks and hardships of the shepherd's task. "in the day the drought consumed me, and the frost by night, and my sleep fled from mine eyes" Clad in his rough, warm sheepskin coat, the shepherd carries a small wallet or "scrip" for food, a sling, with stones from which he can guide the sheep from a distance, or slay their foes, as David slew Goliath. He carries, also, both "rod and staff"· the "rod" a stout club, being also a much needed weapon of defence



From the painting by F Shields] [*Photo· Autotype Co , Ltd*

THE GOOD SHEPHERD



SHEPHERD IN SHEEPSKIN

David describes fights with lions and bears (1 Sam. xvii. 34); and Amos, who had been a herdman before he was a prophet, gives us a vivid picture of the shepherd's occasional failure—"As the shepherd rescueth out of the mouth of the lion two legs, or a piece of an ear" (Amos iii. 12). The staff, out of which has developed the pastoral staff or crozier of the medieval and modern bishop, served the double purpose of a weapon and a crook for the management of the flock itself—helping, e g a strayed lamb out of a thorn bush or a cleft in the rock. The Syrian shepherd of to-day has, like his British counterpart, a dog, half wild but perfectly trained for the job: and though the sheep dog is only once mentioned in the Bible—"Whose fathers I disdained to set with the dogs of my flock" (Job xxx. 1)—we may conclude that the ancient Hebrew shepherds used him, if only as a watch dog. There is in Isaiah a touching picture of the eastern shepherd—symbolising the Christ—which is specially familiar to us because of its association with the music of Handel's *Messiah.* "He shall feed his flock like a shepherd, he shall gather the lambs in his arm, . . . and shall gently lead those that give suck" (Is xl. 11) We notice that the oriental shepherd leads—not drives—his flock. This is clear too from the words of the Psalm: "He leadeth me beside the still waters" and our Lord's own description in the great allegory: "and he calleth his own sheep by name, and leadeth them out . . . he goeth before them, and the sheep follow him" (Jn. x. 3, 4). This is exactly what the eastern shepherd has done all through the ages.

The Shepherd's Daily Routine.—The shepherd's daily task, described in Psalm xxiii, is thus to lead out his flock in the early morning, directing them to the points where "green pastures" and "waters" are to be found: to "guide them in the paths of righteousness," warding them off poisonous herbs and dangerous declivities, guiding them with his "staff," protecting them from danger with his "rod" and with his sling; providing first aid for the weary and exhausted—the anointing "oil" and the "cup"—and finally bringing them back "home" to the fold.

The devotion of the genuine shepherd, who will not, like the mere hireling, flee at the sight of the wolf, but be prepared to risk his life in defence of the flock is an outstanding feature of Christ's allegory, and similar risks are implied in the picture drawn for us in the parable of the *Lost Sheep*: "If any man have a hundred sheep, and one of them be gone astray, doth he not leave the ninety and nine, and go unto the mountains, and seek that which goeth astray?" (Mat. xviii. 12, 13; Lk. xv. 3-6).

The details of the *Good Shepherd* allegory call for some further mention, and especially with regard to the sheepfold. In this allegory the use of the shepherd's *voice* is very prominent· and this is true to life.



THE SHEEPFOLD

On the march, the eastern shepherd guides the sheep largely by his voice, and especially at watering-time, when many flocks collect round a well, and have to take their turn at the troughs, and drink in relays. According to the reports of travellers, the way in which each sheep instantly recognises the voice of his own shepherd is very impressive.

The Fold.—The fold—prominent in Jn. x. vv 1, 7, 16—is a square or oblong enclosure of considerable size, protected by a high wall of rough stone, on the top of which are often ranged formidable thorn branches to make it the more secure from wild beasts or thieves Near one corner is the door where the wall is raised to a still greater height, and elaborately arched over the opening with hewn, or specially selected stone. Jesus first speaks of the shepherd as "entering by the door" which is opened by a porter or door-keeper; later He names Himself "the door"; and the eastern shepherd may often be seen blocking the entrance with his person, to prevent the egress of the sheep from within or the entrance of some unwelcome visitant from outside. Within the enclosure may be found a smaller covered building, with an arched opening by which the sheep may enter when shelter from cold or rain is indicated

A difficulty has sometimes been felt about the story of the shepherds out all night "in the fields" at Bethlehem, at the time of our Lord's nativity, and it has been asserted that "the flocks in Palestine are not out at night in December" December 25 is, however, only by tradition and convention kept as the birthday of Jesus· and there is evidence that the sheep set apart for the Temple sacrifices were kept out of doors all through the year in the neighbourhood of Jerusalem And the flocks may have had their folds " in the fields " Similarly we may reasonably suppose that when the shepherd in the parable is described as " leaving the ninety and nine in the wilderness," he leaves them carefully folded. Negligence is foreign to the ideal shepherd's character.

The other sides of the farmer's life—fruit-culture and corn-growing—are treated in the articles which follow.



From the painting by Hugo van der Goes] THE ADORATION OF THE SHEPHERDS [*Photo: Anderson*

IX. THE FRUITS OF THE EARTH

APART from wheat and other cereals, the staple products of Palestine are the familiar and famous flora of Mediterranean countries, the vine, the fig (and sycamore), the olive and the date palm.

On the first three of these Jerusalem, which has comparatively little cornland in its neighbourhood, was largely dependent for subsistence; especially upon the olive, which flourishes conspicuously in her porous, rocky soil

The Vine.—The prominence of the vine and its products in Scripture is overwhelming The abuse of these products in vine-growing lands is proverbially rare; and though drunkenness is named and reprobated both in the Old Testament and the New, the vine appears in the main as an important factor in human life and a conspicuous benefactor of mankind: "And wine that maketh glad the heart of man" (Ps civ 15): and so, like the sheep, it becomes a notable symbol of moral and spiritual things. Israel is often spoken of in the Old Testament as the vine or the vineyard of the Lord, and in two places especially this leads to an elaborate description of the vineyard of the time, with its protecting trench and fence of thorns, the careful clearing of stones and of noxious weeds from the soil, the planting of choice vine plants, the expert pruning; the provision of a watch tower against robbers and a winepress for the vintage: "My wellbeloved had a vineyard in a very fruitful hill: and he made a trench about it, and gathered out the stones thereof, and planted it with the choicest vine, and built a tower in the midst of it, and also hewed out a winepress therein" (Is. v. 1, 2).

In the New Testament also, where God is the owner who employs men to work in His vineyard, emphasis is laid on the numerous hands employed at vintage-time; on the strenuous character of the work in the hot days of early autumn. ". . . which have borne the burden of the day and the scorching heat" (Mat. xx 12), and the standard pay of one *denarius* (roughly a shilling), also, in the second parable, the system still existing in France and Italy by which the landlord puts the vineyard and its equipment entirely into the hands of tenants, who are pledged to render him a certain proportion of the fruits each year: "And when the season of the fruits drew near, he sent his servants to the husbandmen, to receive his fruits" (Mat xxi 34).

Again, in the allegory where God is the vinedresser and Christ the vine and His disciples the branches, emphasis is laid on the pruning away of branches that are not fruitful, and the bonfire made of this useless wood: "He is cast forth as a branch, and is withered; and they gather them, and cast them into the fire, and they are burned" (Jn. xv. 6).

The hillsides had their sunny slopes terraced with stone retaining walls for vineyards as for oliveyards, giving the necessary depth of soil; and the rows of vines were planted sufficiently far apart to allow a plough to pass between, keeping the soil loose and clean. The older stems of the vines, pruned back year by year, after the vintage, often attain the thickness of the human body The clusters grow on the new wood, of which the long branches were sometimes left to trail on the ground, with the fruit-bearing twigs supported on forked sticks, sometimes they were festooned on poles or on other trees, most picturesquely, as often in Italy to-day.

The poorest vineyards were near the Dead Sea (Deut xxxii 32), some of the best in Samaria (Micah i. 6; Jer. xxxi. 5) and, as now, near Hebron (the famous grapes of Eshcol, Num xiii. 23, 24)

[illegible] occurs in scripture most [illegible] of Divine judgment—the [illegible] resembling blood: "Where-[illegible] red in thine apparel, and thy [illegible] him that treadeth in the [illegible]" (Is. lxiii. 2); "And the angel cast [illegible] into the earth, and gathered the [illegible] of the earth, and cast it into the [illegible], the great winepress, of the wrath of [illegible]. And the winepress was trodden without the city, and there came out blood from the winepress, even unto the bridles of the horses" (Rev. xiv 19) In Deut. xxxii. 14, wine is actually called "the blood of the grape". and we remember how Jesus says at the Last Supper, taking up the wine cup: "This is My blood of the Covenant"

Normally the winepress was hewn out of the rock and consisted of two tanks or vats: a higher in which the grapes were put to be trodden with naked feet, communicating by an orifice near its bottom with a lower vat into which the juice flowed and was stored, to be subsequently decanted by means of a ladle or dipper, into large earthenware jars, or into the wine-skins, mentioned by Jesus as liable to burst when old, under the strain of fermentation of newly made wine "Neither do men put new wine into old wine-skins: else the skins burst, and the wine is spilled, and the skins perish; but they put new wine into fresh wine-skins, and both are preserved" (Mat ix. 17).

These goatskins are made into bottles by cutting off the head and feet of the animal and drawing out the body without any further incision New wine must stand for forty days before it could be offered as a drink-offering. Wine was drunk from a cup or bowl.

The Fig.—The vine and the fig tree are often coupled together in the Old Testament, as adjuncts of the ideal home. "And Judah and Israel dwelt safely, every man under his vine and under his fig tree" (1 Kgs. iv. 25), and still to-day they supply a welcome shade in the immediate vicinity of house or cottage.

In the parable of the *Barren Fig Tree* it is described as planted in a vineyard, and that was, no doubt, and often is, its customary place

The tree, known to botanists as *Ficus carica*, with its smooth bark, blunt and rather clumsy-looking twigs, huge leaves and pear-shaped black or green fruit, is not altogether unfamiliar to us, for it was introduced into Britain several centuries back. In Palestine it is indigenous, and has always been greatly prized and carefully cultivated.

Three times our Lord uses the fig tree in His teaching, and on each occasion He throws light on its characteristics.

(1) In His warnings about the end of the world, He compares the signs to be looked for with those of nature. The fresh green leaves are a heralding of summer· "Now from the fig tree learn her parable when her branch has now become tender, and putteth forth its leaves, ye know that the summer is nigh" (Mat. xxiv. 32).

(2) In the week of His Passion He singles out a tree as a type of hypocrisy, and to fix the lesson on His disciples' memory, and to demonstrate to them at the same time what faith can do, He blasts it with a word: "And seeing a fig tree afar off having leaves, he came, if haply he might find anything thereon: and when he came to it, he found nothing but leaves; for it was not the season of figs" (Mk. xi. 13, 14).

To appreciate this miracle we must understand the peculiar habits of the fig tree. Normally the budding fruit appears at the end of the twigs before there is any sign of leafage. This fig tree was precocious: it was in leaf a full month before the usual season. Normally, therefore, its fruit should have been earlier still. It thus becomes a striking figure of the life that is full of pretensions and barren of fruits.

(3) When He wants to suggest the patience of God with men's unfruitful lives, He gives us, in the parable of the *Barren Fig Tree* a vivid picture of fig culture (Lk xii 6 ff).

The tree is planted in a vineyard and put



From the painting by Scheurenberg] [*Photo Hanfstaengl*

THE PEASANT BOY'S OFFERING

under the care of the vine dresser. The owner is disgusted because for three years in succession it has borne nothing, and proposes to cut it down, that it may give place to something more profitable. The vine dresser has not given up hope, and pleads for another year's trial. He will loosen the surrounding earth and enrich the soil with manure, and see if, after all, fruit does not appear.

Sycomore Fig and Sycamine.—Another tree that bears figs is the sycomore fig (*Ficus sycomorus*), the tree into which short-statured Zacchaeus climbed in his eagerness to get a glimpse of Jesus passing along the road (Lk xix. 2 ff).

It is a broad-spreading tree with a thick, short bole, and is specially easy to climb. We call "sycamore" in England what in Scotland is called a "plane tree" (*Acer pseudo-platanus*): and the reason is interesting—because in the Middle Ages it was chosen for Zacchaeus' tree in the religious plays.

The *sycamine* (mentioned only in Lk. xvii 6) is a distinct species, the black mulberry. It has, however, a close kinship with the sycomore fig, which is sometimes called the "fig-mulberry."

Olive.—More prominent in the landscape than even the vine or the fig tree would be the olive, with its picturesquely gnarled and twisted bole and branch, and its light and silvery foliage.

As a member of the order of *Oleaceae* it is a cousin of our familiar ash, but unlike the ash is evergreen. Its leaves, dark green above and silvery white beneath, are rather more like those of the holm oak.

Apart from the Mount of Olives, which figures so conspicuously in the last days of our Lord's ministry, and is mentioned also in the Old Testament (2 Sam. xv. 30) this tree is never mentioned in the Gospels, and only three or four times in all the New Testament: but it was always there in the background, and we must remember that wherever "oil" is mentioned, or "anointing" the olive lies behind: and the name "Christ" itself means "anointed." Its fruit, which varies greatly in quantity from year to year, develops into a blackish berry, highly charged with nutritive oil, which is largely used as an article of diet, an ingredient in cooking, an unguent, and an illuminant. It will be olive oil with which the normal man anoints his face even on fasting days, and olive oil, again, with which the lamps of the *Ten Virgins* in the parable are fed, and Luke, "the beloved physician," gives us a picture of the *Good Samaritan* employing this oil medicinally in his "first aid" to the wounded wayfarer. "and came to him, and bound up his wounds, pouring on them oil and wine." (Lk x 34.)

Near every Syrian and Palestinian village to-day there are olive groves of considerable extent, and that after many centuries of comparative neglect. Even in the days of the Judges the olive held a high place, as may be inferred from the interesting parable of Jotham about the choice of a king among the trees. The olive is represented as indignantly rejecting the invitation, and voicing its own importance: "Should I leave my fatness, wherewith by me they honour God and man, and go to wave to and fro over the trees?" (Jud ix 8, 9)

The fruit only comes with long patience and steadfast tending: great care is needed with the young plants, which do not begin to bear fruit for ten years, and need fifteen to twenty years to arrive at maturity. Hence the olive becomes the symbol of settled civilisation and peace. Once matured, its almost imperishable vitality enables it to bear fruit for centuries.

Olives, like vines, are often grown on terraced hillsides, for though they can do with a minimum of water, these trees need a certain depth and richness of soil. The terraces are ploughed up at least once a year and fertilised with animal manure and with a local marl that has certain special chemical properties.

The olive harvest is in November, though the first ripe olives fall two months earlier,

and are gathered at leisure. The branches were "shaken," and "beaten" with long poles, leaving a certain quantity of berries on the boughs for poor gleaners. "When thou beatest thine olive tree," says the lawgiver, "thou shalt not go over the boughs again it shall be for the stranger, for the fatherless, and for the widow" (Deut. xxiv. 20).

And Isaiah, whose book is so rich in picturesque details of husbandry, gives us a vivid picture of an olive between the harvest and the gleaning: "the shaking of an olive tree, two or three berries in the top of the uppermost bough, four or five in the outmost branches of a fruitful tree" (Is. xvii. 6).

Whether ladders were used, as now, in the olive-beating we cannot be sure. The ladder is an elementary implement; yet it is nowhere mentioned in the Old Testament except, metaphorically, in Jacob's dream.

The Olivepress.—Olives, like grapes, were squeezed dry in a press: and this press holds a very sacred place in the Gospel story, for *Gethsemane* means "olivepress"

Just as the vineyard often had its own winepress, so there was evidently an olive-press in this "garden," or grove of olives, which was a favourite resort of Jesus and His disciples. It was close to Jerusalem, on the slope of Olivet and fifty yards beyond the brook Kedron Here He suffered His agony before the betrayal, kneeling in the moonlight under the olives. There are trees of very great antiquity shown there to-day, and tradition makes some of them coeval with the Agony. but it is not likely that any of them is 2,000 years old.

Of the press itself nothing remains, but one can form an idea of its character from those still in use. The pressing is done in two stages First the berries are bruised in a large circular basin, often shaped in the solid rock This was anciently done with the foot—so Asher is described as "dipping his foot in oil" (Deut. xxxiii. 24) This "treading of the olives" is also mentioned by Micah (vi. 15). More commonly now the berries are reduced to pulp by pressure of an upright circular stone, which is revolved round the edge of the basin by means of a pole passed through its centre and attached to an upright post in the middle of the press. Thus a part of the oil is squeezed out, and as in the case of the winepress, flows through an orifice into a vat at a lower level.

Secondly, to complete the process, a more elaborate press is used, consisting of a stone framework of two uprights surmounted by a cross-bar. The two side posts are deeply grooved on the inner surface and down this groove a heavily weighted beam is made to slide, pressing the already crushed berries which have been gathered up in reed baskets and piled in layers underneath it. The oil streams out as the beam descends, and is collected in a vat as before. The pure oil floats on the top of the impurities and is decanted into jars (There is a Class Picture of "Gathering Olives in Ancient Greece," No. 11 in the portfolio See, also, the lessons on "Wine and Oil," Vol. I., page 88)

The Date Palm.—The *Phoenix dactylifera* is indigenous to tropical and sub-tropical climes. It is the characteristic tree of Egypt and of the desert oases. On their way from Egypt to Sinai the Israelites halted at Elim, one of those oases, where we are told there were "twelve springs of water, and threescore and ten palm trees" (Ex. xv 27). The palm flourished in old times in the Jordan valley, and Jericho was called the "City of Palm Trees" (Deut xxxiv. 3; Jud. i 16); they must have grown, too, in the neighbourhood of Jerusalem, for Bethany means "House of Dates"; and on the first Palm Sunday the crowd came out to meet Jesus carrying "branches of palm trees."

Palm branches were used by the Jews and by other people as emblems of victory (as in Rev. vii. 9), and in a well-known Psalm (xcii. 12) the righteous is said to "flourish like the palm tree", and the fruit tree "planted by the streams of water" (Ps i 3) is probably a palm tree also.

X. CEREAL CULTURE

WITH the cereals—wheat, barley and spelt—we complete the trio of typical Palestinian products: the corn, the wine and the oil that form the constant refrain of the Book of Deuteronomy, and the elements of the Christian sacraments. The three may still be seen occasionally growing side by side and, as it were, intermingled in the Holy Land, and in other Mediterranean countries, as France and Italy—the vines festooned within the precincts of an olive grove, and grain sown in the strips of ploughland between the rows of trees.

In Judaea, so wonderfully adapted for the olive, corn plots must always have been scarce; and Jerusalem (like Great Britain since the nineteenth century) must always have imported grain.

The bulk of the grain is grown in the maritime plain, in large fields. The processes of cereal culture depend much more than



From the painting by P. H. Calderon] [*By permission of the Corporation of Liverpool*

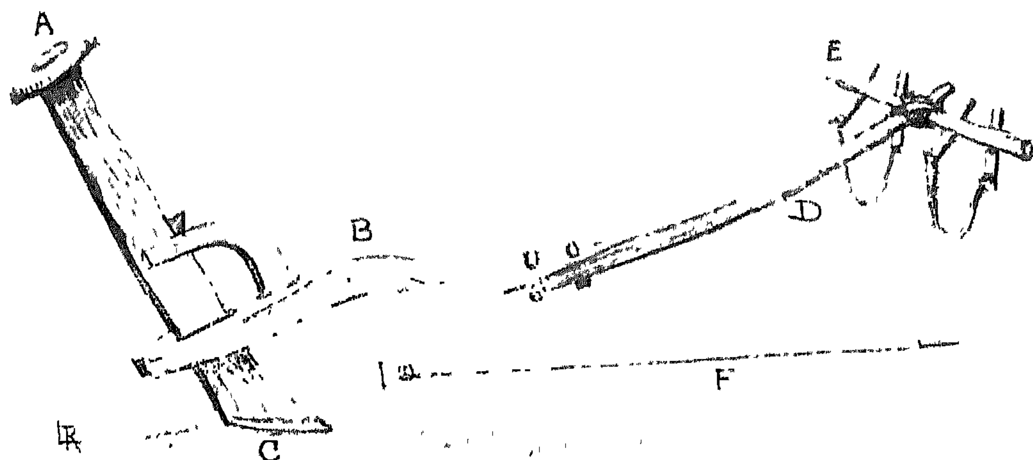
RUTH AND NAOMI

the fruits upon the incidence of rain and sunshine, and the farmer's routine is clearly marked out by the cycle of Palestinian weather, which varies but little from year to year, and from century to century. The periods of drought have doubtless been slightly intensified through the centuries as a result of unscientific deforestation

The Former and Latter Rains.—"The former and the latter rains" are frequently mentioned in the Old Testament

The bulk of the year's rain falls in the winter months, and there are normally some five to six summer months entirely dry Unlike the British farmer, his eastern counterpart need have no anxiety about the weather in harvest time. Thunder rain is not absolutely unknown at such times, but it is extremely rare, and Palestine is not subject to those devastating summer hailstorms which are apt to work so much havoc in central and southern Europe When Samuel predicts "thunder and rain" in harvest time it is as a signal portent of Divine displeasure· "Is it not wheat harvest to-day? I will call unto the Lord, that he may send thunder and rain; and ye shall know and see that your wickedness is great, which ye have done in the sight of the Lord, in asking you a king" (1 Sam. xii. 17).

The former rains, coming usually at the end of October or the beginning of November, soften the dry, parched ground and prepare it to receive the seed The rains of November and December are the heaviest: after that the intervals between showers become longer, though January and February are colder, and the rain sometimes turns to snow In March the rains are lighter, and serve to mature the vegetation· in April showers are rare.



THE PALESTINIAN PLOUGH

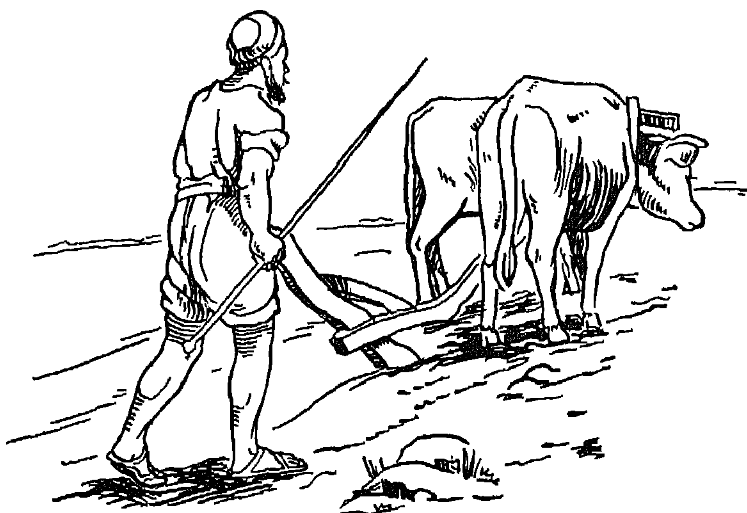
A Handle, grasped by left hand.
B Beam
C. Plough Shoe.
D Pole
E. Yoke
F. Goad

The Plough.—The processes and implements employed are much like those familiar to our fathers, and to the elders amongst us. The present writer remembers to have seen, as a child, in Shropshire, seed scattered by hand, and grain reaped with the sickle. But the ox plough used in Palestine till the beginning of this century was far more primitive than our own horse plough

It was developed out of a forked branch, in which, originally, the stem was cut off short to form a ploughshare, while a short arm formed the handle, and a longer the shaft to which the yoke was attached for the draught oxen. Eventually it came to be constructed of three main parts· the *handle* (A)—a straight short piece, morticed and fastened into a crooked centrepiece (B) which formed the *beam*, and riveted or bound to this the longer *shaft* (D) for the oxen. The ploughshare was shod with iron, and from the reference in 1 Sam xiii 20-21, it evidently sometimes had attached to it a "coulter" to pierce the soil before it was turned by the share That passage speaks also of two other implements, the *axe*, and the *mattock* or pickaxe.

Practically all the processes of cereal growing find mention in the Gospels. The ploughing takes place in autumn as soon as the "early rains" have softened the soil The eastern farmer yokes his oxen and repairs to the field, and then "puts his hand to the plough"—his left hand. With the right he directs and stimulates his team, prodding them with the long, slender, pointed goad (F): (hence the phrase in Acts xxvi. 14—referring to a recalcitrant ox—"it is hard for thee to kick against the goad").

It is essential for the ploughman to keep his eyes in front and refrain from "looking back"; not only that he may run a straight furrow, but to avoid jarring and dinting or even breaking the light plough against the rock beds that too often crop up near the surface of the soil. So we can understand the warning: "No man, having put his hand to the plough, and looking back, is fit for the kingdom of God"



Ploughing in Palestine

After the plough comes the harrow, to "open and break the clods" (Is. xxviii. 24). The Hebrews used a wooden sledge harrow, furnished with sharp stone teeth: or sometimes a strong thorn bush was dragged over the surface in the wake of the plough

The Sowing.—Sowing began in October and went on at intervals till the end of February—Isaiah describes it as putting in "the wheat in rows, and the barley in the appointed place, and the spelt in the border thereof" Our Lord's picture of the *Sower* gives all the details of an eyewitness. The sower holds the basket or vessel containing the seed in his left hand, and with his right hand deftly scatters the seed abroad as he passes along.

In the parable we visualise a stretch of ploughland that has been cleaned for the sowing, but has thorns and weeds here and there ready to spring up and compete with the young grain for nourishment and light and air. There are hard-worn patches of bridle path where the seed falls an easy prey to the crows and other birds that expectantly follow the sower; and there are outcrops of rock near the surface in places, with but a shallow covering of soil, where grain sprouts quickly, but shrivels and withers away as soon as the hot summer weather sets in.

The Growing Grain.—In the parable of the *Seed Growing Secretly* (Mk. iv. 26-29) we have a beautiful picture of the growth and development of the grain during the spring months, while the farmer can do little but wait and watch the mystery of the spontaneous activity of nature: "as if a man . . . should sleep and rise night and day, and the seed should spring up and grow, he knoweth not how. The earth beareth fruit of herself, first the blade, then the ear, then the full corn in the ear." These are the "four months" (mid-December—mid-March) which Jesus names as intervening between the sowing and the time when the "fields are white unto harvest."

The productiveness of the wheat on a fertile soil carries us back to the words of the parable of the *Sower*. Thirty, sixty and even a hundredfold is no exaggeration in the case of the bearded wheat of Palestine, where, as in Egypt, several ears will be found growing on a single stalk: "behold, seven ears came up upon one stalk, full and good" (Gen. xli. 22)

The parable of the *Tares* introduces us to another factor in the grain-growing process· the prevalence of certain weeds that complicate the farmer's work by insinuating themselves among the green blades One of these pests, the bearded darnel, is for many weeks of its growth practically indistinguishable from the sown crop, and even when it approaches maturity has a fairly close resemblance to the bearded wheat. It is itself slightly poisonous to men and to herbivorous animals, though not to poultry—in fact its seed is sold to-day in oriental grain markets as food for chickens

The necessity of sorting out wheat and "tares" on the harvest field that the latter may be collected and burnt (Mat. xiii. 30), adds greatly to the labour necessitated, as well as causing an inevitable waste of a certain percentage of the wheat In the Revised Version the word *tares* is translated by its correct name *darnel*.

The Harvest.—The barley harvest, which forms the background of the Book of Ruth, began normally at the end of March or the beginning of April, and the wheat harvest two or three weeks later, and lasted, apparently, about seven weeks The reaping is generally described in the Bible as "putting in the sickle." So, in Deuteronomy we read (xvi. 9) "from the time thou beginnest to put the sickle to the standing corn," and in a parable already quoted (Mk. iv. 29): "But when the fruit is ripe, straightway he putteth forth the sickle, because the harvest is come"; or again, in a symbolic passage (Rev. xiv. 15)· "Send forth thy sickle, and reap: for the hour to reap is come; for the harvest of the earth is over-ripe."

The reaping is done by the owner and his family, sometimes with the help of hired labourers (Mat. ix. 38, cf. x. 10).

The eastern harvesters with their sickles cut the straw fairly long, stooping to their work Bundles or sheaves are then made

up by hand, as was formerly done with us, and the sheaves are then carried off in carts or wagons to the threshing floor or the barn. So Amos speaks (ii. 13) of the pressure on the ground of a cart "that is full of sheaves."

With grain harvest, as with olive harvest and vintage, provision was made in the Mosaic law that something should be left for poor gleaners· "And when ye reap the harvest of your land, thou shalt not wholly reap the corners of thy field, neither shalt thou gather the gleaning of thy harvest. And thou shalt not glean thy vineyard, neither shalt thou gather the fallen fruit of thy vineyard, thou shalt leave them for the poor and for the stranger" (Lev. xix. 9, 10). The romantic idyll of Ruth centres in the gleaning

Even before the harvest began, it was lawful for a neighbour, passing through the fields, to pluck off ears of wheat to satisfy his hunger The law expressly provides for this "When thou comest into thy neighbour's standing corn, then thou mayest pluck the ears with thine hand, but thou shalt not move a sickle unto thy neighbour's standing corn" (Deut. xxiii 25). On one occasion Jesus and His disciples acted on this permission. "He was going through the cornfields, and his disciples plucked the ears of corn, and did eat, rubbing them in their hands" (Lk. vi. 1). The Pharisees objected, not at their taking another man's corn, but at what they regarded as a breach of the sabbath. According to their meticulous rules, rubbing the ears in the hand to separate the grain constituted *work*, and was therefore unlawful on that day.

An interesting point is the fact that the Jews had three "Harvest Festivals" in the year. The joy of ingathering was a definitely religious joy· "They joy before Thee," says Isaiah (ix 3), "according to the joy in harvest"

The three great festivals of the Jewish year, though each became connected with a vital episode in Hebrew history, were all of them originally agricultural·—

(1) Passover, when they commemorated the deliverance from Egypt, celebrated the beginning of the barley harvest

(2) Pentecost, several weeks later, the festival, according to Jewish tradition, of the giving of the law on Mount Sinai, celebrated the completion of the wheat harvest

(3) The Feast of Tabernacles, which was a perpetual reminder of the wanderings in the wilderness, was also a celebration of the autumn vintage, and the gathering of the olives and other fruits

"The Bible," it has been said, "is an open-air book; it is redolent of wind and rain, storm and sunshine, blossom and fruit, for it was written by men who delighted in



THRESHING WITH OXEN

the work of God and who never forgot the Creator in His work, but viewed everything in the light of His orderly power and providential care and loving kindness." *E. Griffith-Jones.*

The Threshing.—What happened to the grain after it was harvested? Threshing-floors, hard, level and smooth, were provided from ancient times, sometimes in the open country, sometimes within a town or fortress like that famous threshing-floor of Araunah the Jebusite (2 Sam xxiv. 18 ff.) which David bought as a site for the Temple at Jerusalem. These threshing-floors were usually on high ground, where breezes would be available to carry off the chaff. The grain was piled on the floor; and threshed, if in smaller quantities, with a stick or a flail. Thus Gideon (Jud. vi 11) was "beating out wheat" in the winepress, to hide it from Midianite raiders. In larger quantities it was threshed out by the feet of oxen, and the law had a special provision (Deut. xxv. 4) "Thou shalt not muzzle the ox when he treadeth out the corn," which is twice quoted by St Paul. Sometimes a threshing instrument was used and drawn by the oxen.—a board on which the driver stood, furnished with nails and sharp flints beneath: so Isaiah speaks (xli 15) of "a new sharp threshing instrument having teeth"; and Araunah, in the passage already quoted (2 Sam xxiv. 22) offers the threshing instruments for kindling-wood.

After the threshing, the grain and chaff were shifted from the broken straw with a wooden three-pronged fork, and winnowed with a shovel or a shovel-like fan. So Isaiah (xxx. 24) speaks of "savoury provender . . . winnowed with the shovel and with the fan"; and St. John Baptist speaks of our Lord as one "whose fan is in his hand, and he will throughly cleanse his threshing-floor, and he will gather his wheat into the garner, but the chaff he will burn up with unquenchable fire" (Mat. iii. 12) The "garner" spoken of is the grain's final



WINNOWING

resting place before it goes to the mill. an underground cistern (of which many have lately been unearthed in Egypt) or a granary or barn, such as the *Rich Fool* of the parable proposed to rebuild and enlarge after a record harvest· "This will I do: I will pull down my barns, and build greater; and there will I bestow all my corn and my goods" (Lk. xii. 18)

Subsidiary Crops.—A word should be said about certain subsidiary crops, some of which, anise and cumin, are familiar in the Gospels. The seeds of these two plants—mentioned as subject to tithe (Mat. xxiii. 23)—were and are commonly used in Palestine for medicinal and culinary purposes. They are employed as a tasty flavouring, especially for meatless dishes, and both are used to ease colic and flatulence.

Cumin or cummin is an umbelliferous plant native to Palestine, and is coupled by Isaiah (xxviii. 27) with fitches—fennel flower—a ranunculaceous plant, growing wild in the Mediterranean region, and cultivated in Egypt and Syria for its pungent black seeds, which are largely used for flavouring cakes Both of these, cumin and fitches, says Isaiah (being delicate plants) are beaten out with a stick, not threshed with a heavy threshing instrument.

Anise, like cumin, is indigenous to Palestine *Anethon* is incorrectly translated "anise" in our New Testament. It is the "dill," a little umbelliferous plant, grown for its aromatic fruits, which are used in medicine and for seasoning They are somewhat flattened and slightly winged. It grows wild in Palestine, and is cultivated in gardens. According to the Talmud, its "seeds, leaves, and stem" were subject to tithe.

XI. THE ITINERANT TEACHER AND HEALER

Open Air Life.—There is one aspect of life in Palestine which must not be neglected if we are to complete our background of the Gospels. We remember that two or more years of the earthly life of Jesus were spent in travelling about, round the cities and villages of Galilee, and farther north as far as Caesarea Philippi at the foot of Mt. Hermon, and again, north-east, by "the way of the sea," to the district of the Phoenician coast towns Tyre and Sidon, in Samaritan villages and towns and in journeyings up to Judaea and Jerusalem.

This last journey Mary, His mother, had undertaken twice before His birth: first when, after the annunciation, she went to visit her cousin Elisabeth in the "hill country . . of Judah" (Lk i. 39),—according to tradition at 'Ain Karim, six miles west of Jerusalem—and again on the pilgrimage with Joseph to Bethlehem which was consummated on the first Christmas Day (Lk ii. 4, 5).

One other double journey He accomplished as an infant, when Joseph and Mary fled to Egypt from Bethlehem and returned after Herod's death to Nazareth (Mat ii. 14, 21).

In general, as we think of the journeys, it is well to remember that for a large part of the year the genial climate of Palestine invites the traveller to camp out, without a camp fire; and that, along the main caravan routes at least, there were public resting places—khans, or caravanserais, sometimes with, sometimes without, an innkeeper—where parties of travellers could find shelter for man and beast, supplying their own provender and victuals.

We hear of Jesus spending a whole night in prayer (Lk. vi. 12) on the hillside, and we may conclude that other nights also were spent in the open—perhaps that of the Transfiguration, on the slopes of Tabor or of Hermon (Mat. xvii. 1; Lk. ix. 28), and some of the nights of the Holy Week on the Mount of Olives (Lk. xxi. 37).

The inns would be less likely to be used in the ordinary way by our Lord and His disciples, than by travelling caravans of merchants, because they had no gear to stow away or pack animals to stable. But an inn seems to be implied in the story of the nativity (Lk. ii 7), and another, whose traces may still be seen, figures in the parable of the *Good Samaritan* (Lk. x. 34, 35).

These public inns were built with strong walls for protection against wild beasts and marauders, round a rectangular court some one hundred yards or so square, with a well



From the painting by Burnand] [*Photo W F Mansell*
THE DISCIPLES RUNNING TO THE SEPULCHRE

in the middle from which the guests drew water for themselves and their cattle.

Round the walls were arched recesses in which the horses, mules, camels and asses were stabled; and according to one theory it was in such a "stable" that Christ was born. Above these arched recesses there were sometimes chambers, bare and unfurnished, where the human guests would accommodate themselves for the night, with packs and saddles for pillows and their own cloaks for coverings. Where there was an innkeeper or custodian (as on the Jericho road) his quarters would be adjoining the strong high arched gateway, and near by, or above the gate, would be chambers where he could house and tend special guests.

But the Palestinian tradition of hospitality would make such an inn unnecessary for a pedestrian who found himself at nightfall in a town or village. Strangers would be expected to stand near the gate or entrance of the city and wait for the invitation which would rarely fail Such invitations were obviously expected by the Twelve (Mat. x. 11, 14; Lk. ix. 4) and the Seventy (Lk x 5) when sent out on missions, and by Jesus even in His projected mission to Samaritan villages: in this last case the refusal of hospitality was noted as a marked insult (Lk. ix 52, 53) Sometimes we find Him lodging with personal friends, as in Peter's house at Capernaum or in that of Mary and Martha which we learn from the Fourth Gospel to have been at Bethany (Jn. xi. 1).

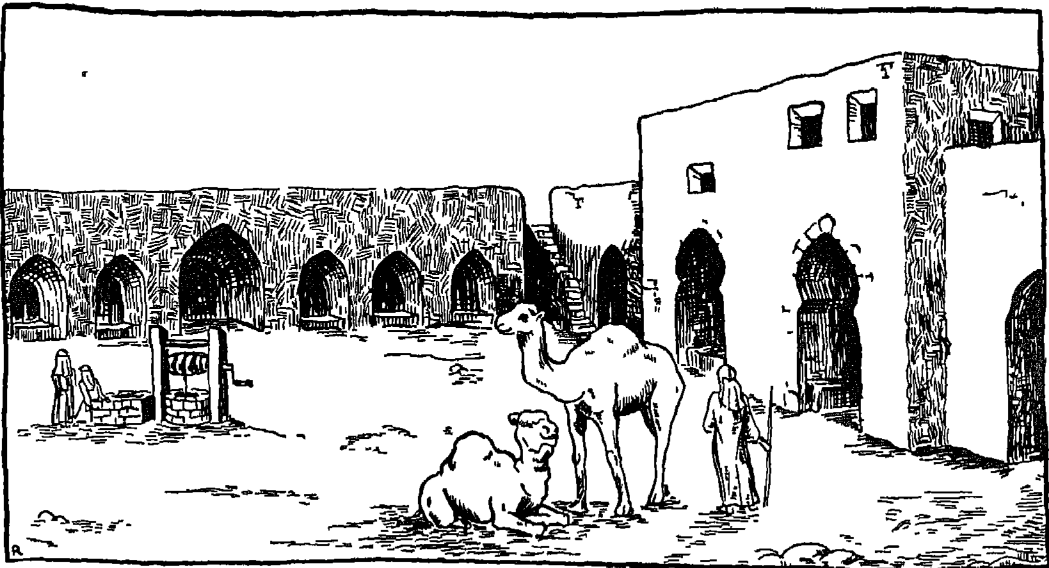
The Roads.—The roads and paths He trod were in the main rough mountain paths and bridle roads. Often He climbed the Galilean mountains; sometimes He passed through cornfields; occasionally, as in part of the journey from Jerusalem through Sychar to Nazareth (Jn iv), or along the *Via Maris*—the "way of the sea" that led from Damascus past Capernaum to Tyre and Sidon—He

would find Himself on roads centuries old, where armies had passed to and fro for above two thousand years But even these would not approach our modern standards In the infant journey from Bethlehem to Egypt, the party in their flight would use the fairly good ancient track, which Jacob and his family of seventy persons traversed in Pharaoh's wagons centuries earlier, past Hebron, and down through Beersheba to the land of Goshen (Gen. xlv 21, 27), and with good going might reach the Egyptian frontier in four days' march

But the routes on and among the limestone hills on each side of Jordan, or among the Galilean hills would be just mule tracks, which the Romans may have already improved here and there, as Josephus tells us some of them were improved forty years later by the detachments of sappers which accompanied Vespasian's invading army

There were at least three main routes between Galilee and Jerusalem. One runs "through the midst of Samaria," and our Lord took it on the journey described in Jn iv. Sychar—the modern Askar—where He met the woman at the well, lies just within the Samaritan border, about eight miles south-east of Samaria itself, and at the foot of mount Gerizim. It lay halfway between Jerusalem and Nazareth, about two days and a half from either The second half of the journey would traverse much more smiling country than the first.

Another road to Jerusalem, instead of entering Samaria, turned east to Scythopolis, known to-day as Beisan, i.e Bethshan—the place where the Philistines exposed the corpses of Saul and his sons (1 Sam. xxxi 10), near which the road crossed the fords of Jordan—according to some the scene of John's baptising (Jn. iii 23)—and wandered over the hills of Gilead to the east of the river, till it swept back again into the deep gorge, to the fords opposite Jericho This route, which avoided all contact with Samaria, may probably have been used sometimes by Jesus, especially as the Fourth Gospel represents Him repeatedly as to be found "beyond Jordan" An intermediate route, skirting but the fringe of the Samaritan country, passed from Bethshan due south on the near side of the Jordan valley direct to Jericho—the "way of the plain", which Ahimaaz took with news for David (2 Sam xviii. 23)—and this Christ may also have used.



An Inn



From the painting by Raphael] [*Photo Anderson*

THE TRANSFIGURATION

These two routes unite for the last twenty miles, from Jericho to Jerusalem; and this section of the route was practically always used by pilgrims from the north To Jesus it would have been familiar at least from His thirteenth year, and this familiarity is reflected in that parable of the *Good Samaritan*, which has made this stretch of road famous for all time. It is a rocky ascent which in twenty miles climbs 4,000 feet, winding through wild gorges pierced with caves which, up to the nineteenth century, were haunts of footpads It climbs up over the eastern shoulder of the Mount of Olives to Bethany, whence a mile's descent brings one to the Kidron valley and the city walls

On this road to-day two traditional sites are interesting There is an inn some five miles up from Jericho (Khan Hadrur) which is popularly known as the "Inn of the Good Samaritan," and has near it ruins which may represent the actual site of the inn of the Gospel, where the party of Jesus may habitually have rested for the night before the final climb And a mile or two farther up there is a spring known as "The Apostles' Fountain," where we may be sure that all ascending pilgrims would stop to refresh themselves as they passed along that wild, parched and thirsty road

Fellow Travellers.—Besides the roads themselves, we would recall the company He would meet or overtake upon the roads. From the first journeys of His boyhood there would be the motley crowds of Galilean pilgrims, filling the ways to Jerusalem at festival times, crowds in which a child might easily be lost We remember how Joseph and Mary, after a visit to the Passover, went back "two days' journey with the company"—presumably as far as Jericho—"seeking for Jesus among their kinsfolk and acquaintance"

In Galilee itself there would be business crowds, caravans from Damascus and Mesopotamia, holiday crowds, including many invalid visitors to the medicinal springs of Tiberias, local crowds in town and village met for converse in the cool of the evening, and, during His mission years, special crowds, including many from a distance, that followed Him (Jn. vi. 24; Mat. xiii 2), to listen to His teaching and to crave His help (Lk. vi 17-19)

Conspicuous among these latter would be the sick and unfortunate (Lk. vii. 21, 22, Mat xiv 14).

The medical profession was of good repute (and Julius Caesar had improved its status) in the Roman Empire. The professional physician of whom we know most in Gospel times—St. Luke—does not appear on the scene till later and the reference in his record, and that of St. Mark, to the case of the "woman with an issue of blood" suggests that the competence of practitioners in Palestine left something to be desired (Mk v. 26; Lk viii. 43).

Our Lord's spiritual healing quickly made its impression, as we note from many references in the Gospels, and particularly after the miracle at Nain (Lk. vii. 16, 17), and in consequence we find Him beset by patients of all sorts (Mat. iv. 24; viii. 16; xi. 5)

Various forms of paralysis come before us (e g Mat. iv. 24, viii. 6; ix. 2), and "the lame and the halt"; "fevers" are twice mentioned, in the case of St. Peter's mother-in-law (Mk. i. 30) and the nobleman's son (Jn. iv. 52) There is the case of menorrhagia already mentioned (Lk. viii. 43), which was considered by the Jews incurable, and one case, at least, of epilepsy (Mk. ix 20 ff).

But the cases which seem to call for special mention are three: the lepers, the blind and the demoniacs

Leprosy is prominent in the Old Testament, and there is much legislation about it in Leviticus. The leper's condition, hard enough in itself, was rendered more hapless by the official teaching, whereby leprosy was regarded as a type of sin

Elaborate rules are laid down for the segregation of lepers, and for their restitution to society in the rare case of a complete cure Meanwhile they were pariahs, with

whom all contact was to be avoided. They could stand only at a safe distance from the thoroughfares, and cry out "Unclean, Unclean!" so craving the pity and the alms of passers-by. Jesus, in His conviction that "love is the fulfilling of the law," showed a special tenderness towards them (as did His faithful follower St. Francis[1] thirteen centuries later) and defied tradition by touching them. He makes definite reference to the ceremonies of the Law when He bids them "Go, shew yourselves to the priests."

The mention of blindness is specially common, as is the fact in Palestine. The intense glare of the sun on dusty roads, and the prevalence of dirt and of noxious flies tend to aggravate and propagate the various forms of ophthalmia, which is in itself highly infectious, and often results in total destruction of the organs of sight. The "blind-born" man cured by our Lord at the Pool of Siloam, is a case of *ophthalmia neonatorum* (Jn. ix.). Two specially interesting cures are that and the healing of the blind man at Bethsaida (Mk. viii. 22): the latter because of the picturesquely related *gradualness* of the restoration, and both because of the means employed in healing. Spittle (as we learn from a medieval Jewish writer) was a recognised remedy for sore eyes. The means applied by our Lord are in each case adapted to the patient's point of view, and are valuable as an aid to "suggestion" and the response of faith.

About the demoniacs—those "possessed with devils"—to whom there are more than twenty references in the Gospels, the last word cannot yet be said, but their frequency and prominence demand some notice. An expert alienist might be able to diagnose some of the cases, but though there is one case where the symptoms of epilepsy are clear (Mk. ix. 20 ff.) and several instances of double or multiple personality (esp. the "Legion" demoniac, Mk. v. 9, and the "seven devils" of Lk. viii. 2); the *data* are in most cases insufficient. The comparatively poor hygienic attainment and the extraordinary unsettlement of the conditions of life may well have produced an unusual crop of acute neuroses, and upset the mental balance of many whom modern scientific treatment, early applied, might have saved. The undoubted prevalence of superstition would intensify the evil, and lead to a popular diagnosis in which evil spirits would play as prominent a part as they do in darkest Africa to-day; or as, till yesterday, the sinister beliefs about the "evil eye" still played in the remoter villages of southern Italy

It may be that our Lord, in dealing with these pathological cases, met them, so to speak, on their own ground, and purposely conformed to the language of the current beliefs, as the best way to achieve cures by His sovereign power of "suggestion."

The nineteenth century was prevailingly Sadducee in its practical disbelief in angel or devil. But it had to admit the fact of dual personality and of other unexplained psychological phenomena. And even those who regret the more recent excursions of scientific men into the realms of spiritism, would probably acknowledge, in their results, evidence for the presence of invisible personalities both good and bad. And even if we could tabulate and pigeon-hole all the Gospel cases of possession, the enumeration of the symptoms and of their psychological antecedents would still leave room for more mysterious causes at work behind.

Religious Controversialists.—Another set of people who dogged our Lord's steps on His journeys were the religious controversialists of many kinds. These may be divided into Samaritans and Jews, and the latter into Pharisees, scribes and lawyers, Sadducees, Herodians and Zealots A glance at these groups will put us in touch with the religious parties of the time, and with the scribes we may couple a brief notice of the synagogues and their functions.

The SAMARITANS, who blocked the direct way between Galilee and Judaea, were descendants of that united heathen popula-

[1] See Vol. IV. page 34.

tion with which the king of Assyria, after his destruction and depopulation of Samaria in 721 B C. had peopled the territory of the northern kingdom (2 Kgs. xvii 24)

To these people the Assyrian king had sent, at their request, one of the exiled Israelite priests (2 Kgs. xvii. 28), who was established in Bethel Under such instruction they recognised the Pentateuch, though they rejected the rest of the Old Testament, and they claimed for mount Gerizim an equal sanctity with the Temple mount at Jerusalem This we see reflected, centuries later, in the speech of the Samaritan woman at Sychar (Jn. iv 20), where we also read that "Jews have no dealings with Samaritans" (Jn iv. 9). In fact, that is an understatement. Jew and Samaritan cordially hated each other; a hatred inherited from the time when the Samaritans of the fifth and sixth centuries B C., baulked of a hoped-for recognition by the returned exiles at Jerusalem, had done all they could to hinder the rebuilding under Zerubbabel (Ezra iv. 4 ff) and under Ezra and Nehemiah (Neh. iv 1, vi 1 ff.).

Josephus tells us that pilgrims from Galilee to Jerusalem often avoided the direct route through Samaria to escape violent handling by the Samaritans, and various notices in the Gospels confirm this.

Our Lord's journey by way of Sychar northwards, which ended so happily (Jn iv. 39-42), was apparently undertaken with some hesitation—"he must needs pass through Samaria" (Jn iv. 4) Later, His disciples are rebuffed when in Samaritan villages they propose to prepare for a southward journey, and the evangelist notes that they refused to welcome Him because "his face was as though he were going to Jerusalem" (Lk ix 52, 53)

This makes the earlier sympathetic relations the more striking, and adds emphasis to the sympathetic notice, in the same Gospel, of the grateful Samaritan leper (Lk. xvii. 16-19) and the picture of the *Good Samaritan* of the parable (Lk x 33). St. Luke very likely derived his records of Samaritans from Philip, the evangelist of Samaria (Acts viii 5 ff), in whose house at Caesarea he spent some days when travelling with St. Paul (Acts xxi 8-10)

Our Lord's sympathetic relations with Samaritans were naturally displeasing to His Jewish critics, who are represented as taunting Him: "thou art a Samaritan, and hast a devil" (Jn. viii. 48).

The Jewish controversialists whom we meet in the Gospels are in the main representatives or emissaries of the SANHEDRIN the central ecclesiastical council in Jerusalem—scribes, Pharisees, Sadducees—in whose conservative minds the words and works of Jesus provoked a serious and growing apprehension, and an increasingly bitter hostility, which culminated in the tragedy of Good Friday. This opposition is marked in every phase of the Fourth Gospel: the synoptic Gospels introduce to us isolated critics at first; then a growing suspicion hardening into a settled official antagonism engineered by spies and *agents provocateurs* (esp. Lk. xi. 54) emanating from the Jerusalem Sanhedrin.

This central council had a kind of general control over ecclesiastical affairs throughout Palestine, having contact with the local synagogue committees not only in Judaea, but also in the north. It traced its own origin to Ezra; but we first hear of it officially on the occasion of Pompey's visit to Jerusalem in 63 B C.

In the Gospels, Jesus speaks of it as "the council" (Mat v 22), in His Sermon on the Mount; and later it figures as the body before which He was arraigned, under the high priest (Mat xxvi 57; xxvii. 1), and by which He was condemned, and handed over to the Roman governor, Pontius Pilate. In the Acts it appears more frequently and was one of the main obstacles with which the first Christian Church in Jerusalem had to contend. (Acts iv. 5 ff; v. 17 ff , v. 34 ff ; xxii 30). Its members were the ecclesiastical leaders of Judaism and were of various schools of thought. Of these the scribes and Pharisees and the Sadducees

come before us in the Gospels as antagonists of our Lord's teaching, and in the background are more purely political groups: the Herodians and the Zealots

The SCRIBES, who are practically identical with the "lawyers" of the Gospels, are not so much a party as a class or profession. We hear of individual "scribes," i e state secretaries, in the old days of the Davidic dynasty (2 Sam viii. 17, xx. 25; 2 Kgs xviii 18, xxii. 3)· but the scribes in the New Testament sense of the word first came into prominence in the fifth century B C with the systematisation and re-establishment of the Mosaic law under Ezra, who is described as "the priest, the scribe" (Ezra vii. 6, 11, 12; Neh viii 4, 9).

They consolidated their influence in the second century B C. in the troublous times of the Maccabean revolt, when Syrian rulers, successors of Alexander, attempted to stamp out the Hebrew religion In union with the Pharisees they headed a reactionary movement of which the distinguishing mark was a fanatical enthusiasm for the letter of the ceremonial law.

In New Testament times, their influence was very great, and they furnished prominent members to the great council of the Sanhedrin. Many of them were actually Pharisees (St. Paul would be an example) and their close association with the scribes accounts for the way in which Jesus constantly couples the two together (Mk vii.; Mat xxiii, etc). In the Gospels, the Third Gospel especially, the scribes are also frequently coupled with the "priests" or "chief priests" (Lk. ix 22, xix. 47; xx. 1, 19), and the phrase "priests and scribes," to which are sometimes added "elders" or "principal men," may perhaps be taken as referring to members of the Sanhedrin, over which the high priest presided.

The later scribes, as distinct from the priesthood, owe their prominence largely to the spread of the synagogue system.

The Synagogues.—When the Jews, in 596 B C., were carried off to Babylon by Nebuchadnezzar, they were divorced from their one lawful centre of sacrificial worship in Jerusalem When the remnant returned under Zerubbabel in 537 and proceeded to rebuild the Temple, a majority of the exiles remained in alien lands Gradually the "Dispersion" developed and grew till Jewish colonies, favoured by Alexander and afterwards by the Romans, were to be found in all the great cities of the civilised world Even in Jerusalem itself we hear of several synagogues assigned to various colonies of the Jewish Dispersion (Acts vi. 9) and before the destruction of Jerusalem in A.D. 70 there are said to have been as many as forty synagogues within the city!

To preserve their distinctive religious loyalty in these scattered homes they devised a system of worship which, though it could not be sacrificial in itself, should link them as closely as possible with the sacrificial ceremonies of the central Temple at Jerusalem, and so train up successive generations in the pure worship of Jehovah.

Thus there arose in the cities and villages of Judaea and Galilee and among the colonists in Gentile cities, a network of "meeting houses," where on every sabbath day the devout might have spiritual communion with Jerusalem, offering liturgical prayer and praise in the language of the psalter (which was the Temple hymnbook), and listening to the reading of Holy Scripture in regular order by competent scribes, who could both translate the Hebrew Scriptures into the local dialects, and also interpret them for the edification of the people.

These synagogues were run by the scribes as professional teachers of the law. There was a committee of "elders" with the "ruler of the synagogue" as chairman (Lk. viii. 41; xiii. 14). A junior member of this committee held office as "clerk" or "attendant" He was called *hazzan*, and is the "minister" mentioned in Lk. iv. 20, who handed to Jesus the roll of the Book of Isaiah, and to whom the latter handed back the roll before beginning His sermon. The

hazzan also acted (as we have seen elsewhere) on week days as teacher or assistant-teacher of the local boys in the synagogue school.

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There can be no doubt that they and the scribes together saved the Hebrew religion at that time from absorption in the surrounding paganism, much as Ezra and Nehemiah had saved it some three centuries earlier. They laid great store by tradition, holding that Moses had handed on oral instructions side by side with the written law, and supplementing this with further rules and regulations from various sources. The *Mishna*, a Pharisaic document of the latter half of the second century A D., gives a compendium of these traditions which fully justifies our Lord's strictures that they "made void the word of God because of your tradition" (Mat xv 6), and that their ranks were largely infected with hypocrisy (ib 7; and chap xxiii).

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control," where, first of all "the priests and the captain of the temple and the Sadducees" are named as active against the first Christians (Acts iv 1); and then, more fully (a description of the Sanhedrin) "their rulers and elders and scribes . . and Annas the high priest was there and Caiaphas, and John, and Alexander, and as many as were of the kindred of the high priest" (ib 5, 6): and again (Acts v 17) "the high priest . . . and they that were with him (which is the sect of the Sadducees)."

The influence of the Sadducees in the Sanhedrin council was, however, to some extent balanced by that of the Pharisee members (see above, the instance of Gamaliel, and cf Acts xxiii 6), and it was only when the two parties were agreed, as in their determination to get rid of Jesus, that there was likely to be a unanimous vote (Mk. xiv. 64)

From the Gospels we learn that, in contradistinction to the Pharisees, they had no belief in a future life (Mat. xxii. 23); and from the Acts we learn further that they admitted "neither angel, nor spirit" (Acts xxiii. 8).

The HERODIANS are twice mentioned in the Gospels, and each time as combining with the Pharisees in a plot against Jesus. The first occasion is in Galilee in the early days of Christ's ministry, after He has performed a work of healing on the sabbath in a synagogue, the second during the last days at Jerusalem when they try to entrap Him with a question about tribute money. "Should it be paid to the Roman emperor or no?" If He says "Yes" He will lose His popularity with the patriotic multitude· if He says "No" they will denounce Him to the Roman governor He throws them back on the fact that the coin in question bears the emperor's image and superscription: yet apparently they had the effrontery to accuse Him before the procurator of "forbidding to give tribute to Caesar" (Lk xxiii. 2).

These Herodians were a political group rather than a religious party men of any school of thought who pinned their faith to the dynasty of Herod the Great

In early days they were ranged in opposition to the Sadducees, but later almost coalesced with them. That they and the Sadducees should combine against Jesus would not have been surprising· but only the strongest motives of hatred and malice could have induced them to co-operate with the Pharisees

The FAMILY OF THE HERODS, with whom these Herodians identified their hopes of Jewish prosperity and independence, looms so large in the Gospels and the Acts that some mention must be made of them here The founder of the family was Antipater, by race an Idumaean and so associated with the age-long feud between Edom and Israel, but by religion a Jew He acted as right-hand man to the last of the Hasmonaean rulers, descendants of the Maccabees; and when, in 63 B C, the Romans appeared on the scene, he ingratiated himself first with Pompey and then with Julius Caesar, whose life he actually saved at the battle of Pharsalia For this he was given Roman citizenship and the title and office of procurator of Judaea

His son Herod (afterwards known as "The Great") was at the age of fifteen associated with Antipater as governor of Galilee. With his father's address and astuteness he ingratiated himself with the Romans who successively rose to power—first with Antony and afterwards with Augustus—and in the end obtained from the Roman senate the title of "king of the Jews," reigning, subject to Roman suzerainty, over Judaea, Samaria and Galilee, from 37 B C to his death in A.D 6. He was an outstanding personality, magnetic and highly gifted with great ambitions, strong will and considerable administrative capacity He advanced very greatly the material prosperity and the prestige of his dominion, and more particularly of his capital, rebuilding the Temple in a magnificent style. Herod was not the sort of man to attract an enthusiastic political following The

Pharisees mistrusted and disliked him, on account of his antecedents, his liberal opinions, and his close relations with the Roman conqueror. Towards the end of his reign he incurred more general dislike He degenerated into a moody, savage and bloodthirsty tyrant, slaying one after another of his own family· so that the massacre of the Innocents (Mat ii. 16) would be just typical of his later years.

On his death in A D. 6, his dominions were divided between his sons Archelaus (Mat ii 22) had Judaea and Samaria, Herod Antipas had Galilee and Peraea, and Herod Philip had Ituraea and Trachonitis (Lk. iii. 1).

Archelaus was a worthless tyrant, whom Joseph and Mary did well to avoid. The Jews found him intolerable, and at their request in A D 6, the Romans deposed him and took over the government themselves. Worthless as Archelaus was in himself, there are details concerning his deposition that are of real interest to us to-day, because they are reflected in our Lord's *Parable of the Pounds.* "A certain nobleman," He says, "went into a far country, to receive for himself a kingdom, and to return. . . But his citizens hated him, and sent an ambassage after him, saying, We will not that this man reign over us" (Lk. xix 12, 14).

Twice the Jews sent such an "ambassage" to Rome against the claims of Archelaus, and the second time, in A.D 6, they were successful. Jesus would remember this because it happened when He was at the impressionable age of eleven or twelve

Herod Philip is only mentioned again in the Gospel as husband of that Herodias (his wife and niece) whom his brother Antipas seduced. When John the Baptist protested against the marriage, she, in revenge, made her new husband behead the Prophet, whom he inwardly respected and feared (Mk vi 17-29).

It is Antipas who figures most in the Gospels and Acts, and on him the Herodians fixed their hopes after his father's death. His character as reflected in the Gospels is, however, by no means a strong or attractive one. We come across his name several times in the first three Gospels, and on each occasion there is a hint of antagonism between him and Jesus that would account for the hostility of the Herodians. In the Galilean ministry our Lord warns His disciples against "the leaven of Herod" (Mk viii. 15), later on he denounces him as "that fox" (Lk. xiii. 32); and when on Good Friday He is arraigned before Him, He disdains to open His mouth in Herod's presence (Lk xxiii. 7-12).

The teaching of Jesus, though not revolutionary in a political sense—as the incident of the tribute money shows—cut deep, and upset the complacency and the vested interests of Pharisees, Sadducees and Herodians And just because He refused to head a political revolution, though at the climax of His Galilean ministry the multitude tried to force Him to accept kingship (Jn vi. 15), His attitude was equally obnoxious to the party of ZEALOTS These people figure more strongly in Josephus than in the New Testament, but some of their leaders are mentioned by Gamaliel in his speech to the Sanhedrin (Acts v 36, 37)

They are the fanatical nationalists, always ripe for insurrection They were indignant that God's People should be under the foreign yoke of Rome Like the majority of the Jews they looked for a Messiah to come: but with them he was to be, first and last, a political leader who should carry them to victory and to national independence Their spirit is evidently behind the incident of Jn. vi. 15, and something of the same kind inspired the acclamations of the first Palm Sunday (Jn. xii 13; Lk. xix. 38). To this faction one of the twelve apostles, Simon Zelotes, had evidently originally belonged, and his views on the earthly character of our Lord's kingship were long shared by his fellow disciples (cf Mat. xx 20, 21). Judas Iscariot is thought by some to have shared the views of the Zealots. Barabbas "who for a certain insurrection made in the city and for murder was cast into prison"

(Lk xxiii 19) was almost certainly a Zealot, and it is possible that the two "robbers"—outlaws—crucified with Jesus, were at bottom such violent and misguided patriots, though the confession of the penitent one would seem to point to something less ideal (Lk. xxiii. 41)

One other class of people an itinerant teacher would not fail to meet now and then in his journeyings was the ROMAN. Roman officials and Roman soldiers had been in evidence in Palestine since Pompey first appeared on the scene in 63 B C In Judaea and Samaria their presence had been more obvious since the appointment of a Roman procurator on the deposition of Archelaus in A D 6. They may have done something already to improve some of the roads on which He walked. The frequent sight of criminal cross bearers escorted by Roman soldiers would leave a vivid impression on His mind, and on one occasion at least, He did a kindness to a Roman centurion which has left its mark on the Gospel (Mat. viii 5-13).

But the detailed account of the Roman government of Judaea must be left till we come to Jerusalem.

XII. JERUSALEM

MANY lines of thought lead us to Jerusalem · so unique in its past history; so central in the Gospel story.

It was the scene of Christ's presentation as a baby of thirty-three days, of His "finding in the Temple" at twelve years old, and of various visits at Passover-time and other festivals in later years. It was the scene of His triumphal entry on the first Palm Sunday; of His "Last Supper"; of His betrayal, arrest, condemnation, crucifixion and burial, and of the triumphant sequel It was the background, too, of that rich and profound series of teachings and parables that are recorded in the later chapters of the four Gospels Further, it was the centre from which had issued the sinister forces, reactionary and revolutionary, of fanaticism and hatred which had spied upon Him and dogged His steps from the early days of His ministry in Galilee, and had turned the (at first) popular success of that ministry into a failure and a menace. It was the spiritual home of the widely influential great Sanhedrin, of Pharisees, Sadducees, Herodians and Zealots, and at the same time the object of His own yearning love and patriotic reverence (Mat xxiii. 37 ff ; Lk xix. 41 ff.)

View from Mount of Olives.—We may approach it as He approached it on that fateful day from the Mount of Olives, past Bethany—the still existent village of *el Azarieh*, i.e. "Home of Lazarus" (Jn. xi 1)—and the adjacent hamlet of Bethphage ("House of Figs") of which no trace remains.

Even to-day an amazing view of the city bursts upon the traveller at the point where Jesus paused and wept (Lk. xix. 41)—a sight calculated to stir the emotions. When He saw it, it must have been more moving still. A large and populous city, grandly and grimly set in a waste of barren rocks and slopes and ridges, with its face towards the desert

In front—where then the Temple stood, in its splendour of white and gold—is the spacious Haram area, with the "Dome of the Rock" rising in its midst[1] and the massive enclosing wall crowning the precipice that falls down into the gorge of Kidron. At the foot of these cliffs, a little to the left down the valley, is the only natural water

[1] See illustration Vol III page 120



[Reproduced by courtesy of the C.P R

WAILING WALL, JERUSALEM

supply of the thirsty city—"The Virgin's Fountain," in old days "The Pool of Gihon."

Behind this Temple area the city is tilted up towards the north and west A closer inspection shows that the town is not merely a mass of buildings covering a rock plateau tilted southwards and eastwards. Besides the deep drop into the Kidron valley eastward and the vale of Hinnom southward, there is a marked depression running north and south through the midst of the city, and a less marked one running east and west: and these together divide the area into four unequal parts. The depression running north and south has been known since the first century by Josephus' name of the Tyropoeon or "Cheese-makers' Valley" But its depth is by no means what it was

In fact, the four original heights of Jerusalem, like the "seven hills" of Rome, have been disguised and masked by successive sieges and destructions, which have greatly modified the contours of the site, filling up the natural hollows with rubble

This is emphatically true of the Tyropoeon valley, where the latest excavations of the Palestine Exploration Fund show the natural rock to lie here 35 ft. and there 50 ft., and near the Temple area as much as 80 ft below the present level, a terraced series of market gardens occupying the surface.

Before the two great devastations under Titus and Hadrian, when Christ's prediction "not one stone upon another" (Mat. xxiv. 2, etc) was almost literally fulfilled, there had already been repeated sieges and demoli-

tions of Jerusalem. That of Nebuchadnezzar in 586 B C was undoubtedly most drastic Nehemiah when, in 444 B.C., he arrived to take charge of the rebuilding of the city, gives interesting and important indications of the state in which he found it (Neh. ii. 11 ff)

Aspect in Gospel Times.—We may perhaps try to reconstruct for ourselves the general aspect of the city in Gospel times, as it might have been viewed by an airman—had such then existed—hovering over the spot where the three valleys of Hinnom, Tyropoeon and Kidron meet at its southern end. In the foreground, to the right, would be the comparatively narrow and insignificant hill of Ophel, on which had stood, in old days, David's citadel. Behind this, and towering above it, the Temple area, with the central structure of the Holy Place rising high above the surrounding colonnades and porticoes, and to the right of it the column of smoke rising from the altar of burnt-offering. Behind this, again, at its north-west (left hand) corner rose the Tower Antonia Between Ophel and the near south-west hill, on the right, the Tyropoeon valley would interpose a deep depression, and the buildings of the south-west hill would descend towards it by a steady incline

Prominent among these would be Herod's amphitheatre and gymnasium (his theatre was on a hill outside, across the valley of Hinnom) which he had built with a view to keeping his capital abreast of the times; and a massive palace built a couple of centuries back by the Hasmonaean princes—where Herod Antipas occasionally resided. The magnificent palace of Herod the Great (near the present Jaffa Gate) had become the official residence in Jerusalem of the Roman governor, and was now known as the "Praetorium" It would be seen towering up at the north-west corner of the western hill; and from it the north wall of the city seems to have wandered or zigzagged east-north-east till it joined the wall of the Temple precincts Where now we see the dome of the Church of the Holy Sepulchre—if its site is the true one—was then open country, where Joseph of Arimathea had his rock-cut tomb in a garden (Jn xix 41) close to the place of execution.

Sacred Sites.—The sacred sites now shown are numberless, and are unfortunately, most of them, transformed out of all recognition by the pious devotion of the many generations who have followed the example of Constantine and his mother in their zeal to do honour to the holy places

Of the site of our Lord's crucifixion and burial a word more must be said. St. Helena found, as she believed, the True Cross, buried under the site of a pagan temple of Venus, under which was a tomb. Hadrian was known to have desecrated the Christian sites with pagan shrines, when, after the rebellion of Bar-Cocheba, he devastated Jerusalem and transformed it into "Aelia Capitolina." The site is only possible if the city wall passed south-east of it, and that remains doubtful There are still advocates of another, known as the "Garden Tomb," farther off, more suitably placed, outside the northern or Damascus Gate, on the site where tradition also places the stoning of Stephen (Acts vii 58).

Even if, as is possible, the tradition dating from Constantine and Helena be correct, the traditional site of the "Via Dolorosa" will still be inaccurate, because it would make Christ bear His cross not from the Praetorium, but from the Tower Antonia. There is little or no doubt that this latter rose where the Turkish barracks now stand.

Of this "Castle" of Antonia and the Praetorium and the Temple, and the Pool of Siloam and its relation to David's city, we must speak more at length, for each holds a special place in the story of Jerusalem. The Pool of Bethesda (Jn v. 2) is carefully indicated in the Gospel as near the "sheep" place, pool, or market: but where that was no one knows. All the traditional sites are north of the Temple area, but the Pool of

Gihon seems better to suit the conditions The "Coenaculum," or scene of the Last Supper, is traditionally placed on the south-west hill, and may be correct.

Outside Jerusalem there is no doubt of the identification of the (winter) brook Kidron and of the whereabouts of the Garden of Gethsemane. There is perhaps no reason to doubt the identification of 'Ain Karim—a village six miles from the city—as the spot where Mary visited Elisabeth and John the Baptist was born (Lk. i. 39-57), and we may certainly see in Bethany to-day the place where Jesus was guest of Mary and Martha (Lk. x. 38-42) and raised their brother Lazarus to life (Jn. xi. 18-44) Bethlehem stands where it stood when Christ was born, even if we doubt whether the "grotto of the Nativity"—transformed like the Jerusalem sites out of all possibility of recognition—be the actual scene of His birth· and its well is doubtless the well of which David longed to drink (2 Sam xxiii 15), and of which his ancestress Ruth must have drunk before him.

Many centuries earlier still are the associations of Hebron, David's first capital, which lies in a pleasant mountain valley eighteen miles south of Jerusalem, where tradition has it that the tombs of Abraham, Isaac, Jacob, Sarah, Rebecca and Leah are still to be found beneath the Haram enclosure, in the original cave of Machpelah (Gen. xxiii 9). That identification has been so continuous that there seems no reason to doubt it, or question the appropriateness of the modern title of the town, *el Khalil er Rahman*, "The Friend of the Merciful One." Less convincing is the very aged holm oak two miles north-west of Hebron, pointed out as the Oak of Mamre: it can scarcely claim the requisite four thousand years of life Yet it may well represent the size and look of that Oak in Abraham's days.

Hebron and Jerusalem.—The contrast in situation between Hebron and Jerusalem is striking indeed: and it speaks much for David's courage and initiative that he dared to transfer his capital from the first to the second. The amenities of Hebron, where he reigned for the first seven years and a half (2 Sam. v. 5), are vastly superior to those of the Jebusite fortress.

The fertile valley which spreads at its foot—the vale whence were plucked the famous grapes of Eshcol (Nu. xiii 23)—is endowed with more than twenty springs of fresh water Fruit trees and cornlands abound, and there is plenty of rich pasture

Jerusalem has almost no arable patches within sight of it. Olives are practically its sole natural product, and the Pool of Gihon its solitary natural source of fresh water: for the valley of Hinnom is waterless, and the brook Kidron is only a winter torrent.

The contrast of the bare, parched surroundings of Jerusalem not only with Hebron, but with the smiling fertility of Samaria and Galilee is most marked. It suggests a breeding-ground of austerity and fanaticism. One marvels at the miracles of commissariat needed through the centuries to keep alive the population of a capital city And it is still more amazing when one considers the extra pilgrim population gathered within its walls three times a year at the great festivals most of all at Passover-time, when we are told of between two and three million extra mouths to feed!

Gihon and David's City.—It is not as though this grim fortress of a city stood, like Samaria, or Gaza, or Capernaum, astride a great historic highroad Tucked away, as it was, among the hills, the traffic it commanded was artificially attracted Solomon made elaborate provision as far as the court was concerned (1 Kgs. iv. 7 ff), dividing his realm into twelve regions, each responsible annually for a month's supply. When the northern tribes broke off after his death, Jerusalem must have been confronted with a problem like that of post-war Vienna in a greatly diminished Austria.

The water supply was, doubtless from Solomon's time, already augmented by the

provision of some of the numerous underground tanks for rain water which still exist beneath the foundations of the Temple and elsewhere; and in the Gospel era by elaborate aqueducts, bringing in water from a distance. But the historic importance of "The Virgin's Fountain"—in Old Testament language Gihon, or "The Upper Pool" —can hardly be overrated.

When David adopted the Jebusite stronghold on the hill Ophel as his capital, that hill had much more character than it possesses to-day. It still shows a brave face to the Kidron valley on the east, but then it sloped down steeply also on the west, into a much deeper Tyropoeon. And it had an upstanding summit of rock, on which in later times the *Akra*, or citadel, dominated the Temple area to the north In the troublous days of the Hasmonaeans the citadel had been razed and its rock foundation shaved off. And the gradual deterioration of Ophel led later generations to forget its association with the son of Jesse, and to place the "Tower of David" to the west of the Tyropoeon valley and transfer the name of "Zion" to the south-west hill

The strategic importance of Ophel lay in its command of the solitary perennial water supply of the Pool of Gihon—though, as we shall see, that command was not completely effective. It is not named in the record of David's capture of the fortress, unless the obscure phrase in which (in the Revised Version) "the watercourse" is mentioned refers to a steep stair leading down to Gihon from the stronghold (2 Sam v. 8).

At the end of David's life Gihon is mentioned as the spot where Solomon was proclaimed and anointed king (1 Kgs. i. 33). The weak point about this spring was its exposure to the risk of seizure by a besieging army, a risk which became acute when Assyria appeared on the scene King Hezekiah realised this, and when Sennacherib threatened Jerusalem, his comment on the situation was a wise one "Why should the kings of Assyria come, and find much water?" (2 Chron. xxxii 4). So "this same Hezekiah also stopped the upper spring of the waters of Gihon," as the chronicler records (2 Chron. xxxii. 30) "and brought them straight down on the west side of the city of David." How he accomplished this an earlier record (2 Kgs. xx. 20) suggests: he "made the pool, and the conduit, and brought water into the city." The pool that he made is that known as the "Pool of Siloam," in the Tyropoeon, *west* of Ophel, and the conduit one that was rediscovered in 1880—a triumph of engineering. Between Gihon and the lower pool is a channel cut in the rock beneath the hill, in the midst of which was found an inscription in archaic Hebrew recording how the workmen met at last after tunnelling from each end. The Gihon pool was elaborately sealed up against the invader, and the water supply brought within the city walls. This tunnel is probably the reference in Isaiah's phrase, "The waters of Shiloah that go softly"—for which we should perhaps read "secretly" (Is viii. 6).

The Temple of Solomon.—Immediately to the north of this Davidic city lies the Temple area. The Temple which figures so prominently in the Gospel story, especially at the beginning and the end, had behind it a history of nearly a thousand years.

David, having made Jerusalem (i.e the Ophel hill) his capital, purchased on the adjoining height the threshing-floor of Araunah the Jebusite, and set up on it an altar which was to become, for the future, the central focus of the Hebrew religion (2 Sam. xxiv. 18-25). Into his new capital he had solemnly transported the Ark of the Covenant (2 Sam. vi.), and in place of the Tabernacle which had hitherto normally enshrined the Ark he planned to build a permanent Temple. He made great preparations both of treasure and of material for this (1 Chr xxii. 2-5; xxix. 2 ff) and bequeathed to Solomon the task of its erection (1 Chr. xxii. 6 ff) There are detailed records of Solomon's building and dedication of it—about 970 B C—from which a fairly



From the painting by Masaccio] [*Photo* *Anderson*

THE TRIBUTE-MONEY

accurate reconstruction is possible, or would be if we could be sure of the style of architecture (1 Kgs. vi-viii; 2 Chr ii-vii).

In 586 B C Nebuchadnezzar destroyed this Temple, and the returned exiles gradually rebuilt it under great difficulties (Ezra iii 8-13, vi. 13-18), following in the main the lines of Solomon's building, but influenced probably to some extent by the ideal picture set out by Ezekiel (Ezek. ch. xl ff.). They were conscious of their failure to equal the splendour of Solomon's work (Hag. ii. 3; cf. Ezra iii 12) One notable adjunct that would be missing was the imposing palace that Solomon had erected between the Temple itself and Ophel

Between this restoration in the sixth century B.C. and the Gospel epoch, this Temple had been several times pillaged and desecrated One occasion of its cleansing and restoration is reflected in the Fourth Gospel: "And it was the feast of the dedication at Jerusalem it was winter" (Jn. x. 22). This refers to the anniversary of the solemn "reconciliation" of the desecrated building by Judas Maccabaeus after his great victory over the Syrians in 164 B.C.

The Temple which figures in the Gospel story had been restored, enlarged and beautified by Herod the Great, who began the work in 20 B C., and finished the main structure in eighteen months. (The constant addition of fresh embellishment accounts for the statement of the Jews at the beginning of our Lord's ministry that it had been forty-six years in building, Jn. ii. 20)

Herod practically doubled the area of the surrounding courts, building up the fringes of the hill with masonry, much as the early emperors at Rome enlarged the platform of the Palatine with their brickwork.

The whole surface, which was surrounded by porticoes, measured something like 922 feet by 1,100 feet: the latter being the extent of the eastern portico overhanging the Kidron valley, and familiar to us in the New Testament as "Solomon's Porch" (Jn. x 23; Acts iii 1-11, v 12). The southern portico, between the Temple and Ophel was called "The Royal Porch," and was 80 feet deep; the others 40 feet. The court which flanked the central building on the south was much broader than that on the north.

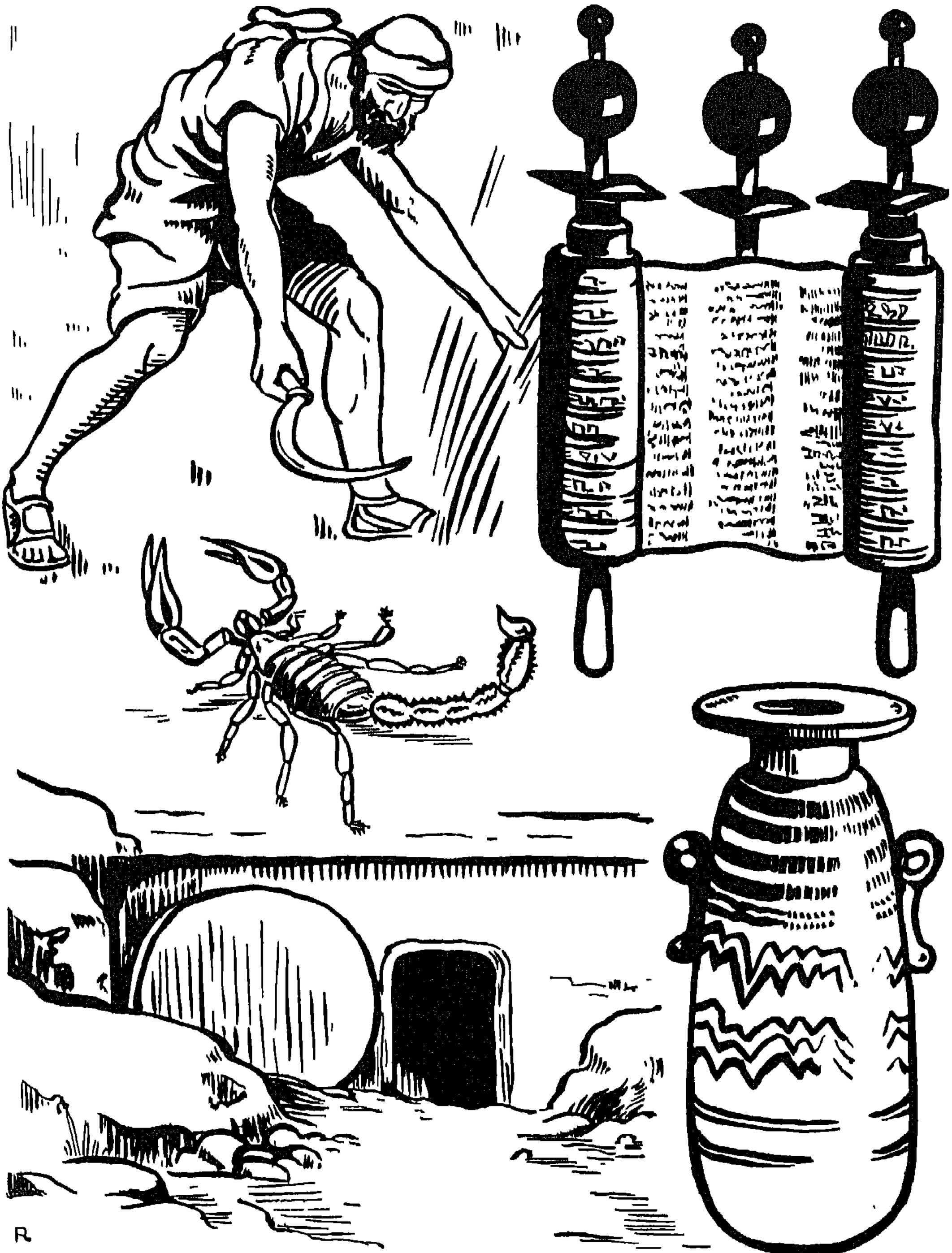
The Sanctuary itself comprising (from east to west) the great portal, the "Holy Place" and the "Holy of Holies" stood up on the west of the altar of burnt-offering, a towerlike structure, 160 feet or more high, and resplendent in marble and gold. The "Veil" which was rent at the time of the Crucifixion (Lk. xxiii 45) was a huge double curtain measuring 30 feet by 60 feet, hung between the Holy Place and the Holy of Holies

The "Beautiful Gate" mentioned in the narrative of the cure of the lame man by St Peter and St. John (Acts iii. 2), was the one which stood between the Court of the Women and that of the Priests. It may have been on the steps leading up to this gate that Jesus sat "over against the treasury" (see below).

In this sacred enclosure the elaborate sacrificial ceremonies of the Levitical law were carried on, year in, year out, without interruption:—the daily burnt-offerings on the great altar where the fire was perpetually burning the morning sacrifice about 9 a m. and the evening sacrifice about 3 p.m, and the many public and private offerings besides, which had all been concentrated since the days of Josiah (*c* 630 B.C.) upon the one Sanctuary. The New Testament leaves all this to be understood. The actual scene of Jesus' teaching was on one occasion (Jn x. 23) the eastern portico; and that may have been His habitual rendezvous, though the background of His commendation of the poor widow was the treasury (Mk. xii. 41; Lk. xxi. 1) in the colonnade of the "Women's Court" where thirteen trumpet-shaped boxes were placed for the alms of the faithful.

The Roman Rule.—The Romans, though masters of Jerusalem, never interfered with the Temple services, never penetrated, at this period, beyond the Court of the Gentiles, and were careful, in general, to respect the religious sensitiveness of their Hebrew

SKETCHES FOR THE BLACKBOARD



REAPING WITH THE SICKLE — SCORPION — ROLL OF THE LAW

ENTRANCE TO ROCK TOMB — ALABASTRON—VASE FOR OINTMENT

subjects But the Tower Antonia, with its garrison of soldiers, rose up close to the north-west corner of the Temple area as a symbol of the Roman dominance and vigilance

It had been built by Herod the Great to dominate the Temple area, after the old *Akra* or citadel on Ophel south of the Temple had been razed. Typical of its use by the Romans is the incident recorded in Acts xxi. 30-34, when the tribune Claudius Lysias descended and rescued St. Paul when the mob tried to lynch him in the Temple courts.

The erstwhile city of David had passed successively under the suzerainty of Babylon under Nebuchadnezzar, of Persia under Cyrus, of Alexander of Macedon and his successors, and finally, after a brief precarious independence under the heroic Maccabees, under that of Rome. When the Gospels open Herod the Great is reigning, as Rome's underling, to be followed shortly by his son Archelaus, and on Archelaus' deposition in A D. 6 it passes, by the express wish of its principal citizens, under the direct rule of a Roman procurator of equestrian rank responsible to the emperor, though vaguely subordinate to the proconsul of Syria. His jurisdiction embraced Judaea and Samaria Pontius Pilate was the fifth in succession of these procurators. His official residence was at Caesarea, on the sea coast in the plain of Sharon, and halfway between Joppa and mount Carmel, and there his troops were concentrated. But at festival times he would come into residence in Jerusalem, because at such times, when the already factious population was swelled by the addition of several thousands of pilgrims, many of them fanatical in their zeal, there was great risk of tumult and insurrection. The Romans' task in Judaea was like that of the British *Raj* in India—to keep the peace, and hold the balance between warring factions, while showing the maximum of tolerance and allowing the maximum of self-government. They allowed, as we have seen, considerable disciplinary powers to the Sanhedrin and to the local synagogues. but as the "trials" before Annas (Jn. xviii 13) and Caiaphas (Mat. xxvii 1-2) show, the Romans reserved to themselves the power of life and death. Pontius Pilate was, as contemporary accounts imply, a somewhat harsh and cruel exponent of a system in itself mild, tolerant and liberal.

The people were naturally restive under his acts of oppression, and he was in constant fear of delation to the emperor. Delation to Augustus had lost Archelaus his throne; and Pilate, unwilling to risk the displeasure of Tiberius, gives way on a point of simple justice to those who shout him down with the threat, "Thou art not Caesar's friend" (Jn xix. 12).

In the sequel, the man who had mingled the blood of Galileans with their sacrifices (Lk. xiii. 1) was actually recalled and banished by Vitellius in A D. 36 for a massacre of Samaritans.

The scene of the momentous miscarriage of justice in which the Gospel culminates is Pilate's official residence in Jerusalem, known as the *Praetorium* (Jn. xviii 28). In fact, it was the magnificent palace built for himself by Herod the Great, of which some traces still remain, near the Jaffa Gate.

From thence Jesus was escorted to the residence of Herod Antipas—probably the Hasmonaean palace lower down the south-west hill—(Lk xxiii. 7-12) then back again to the Praetorium, and so to Calvary

So Jerusalem witnessed His humiliation as it was to witness His triumph.

LONSDALE RAGG.

DRAMATICS AND ELOCUTION IN THE PRIMARY SCHOOL



From the picture by Lord Leighton, P R A] [*By permission of the Fine Art Society, Ltd*

THE MUSIC LESSON

DRAMATICS

THE Greek philosopher Plato classified poetry as (1) imitative or dramatic, (2) purely narrative or lyrical, (3) a mixture of narrative and imitative or epic

In the second class the poet speaks in his own person, in the third class he speaks in his own person when narrating, but when giving the speeches of his characters he speaks in their persons. Thus Homer tells the story of the siege of Troy in his own person, but when Achilles or Agamemnon speaks, then the poet assumes the character of those heroes for the time Similarly, Milton narrates the Fall of Man in his own person but assumes the character of Satan when Satan speaks.

We may follow Plato in confining the term *dramatic* to that rendering of verse which is purely imitative, that is, unmixed with narrative, we will go beyond Plato, however, in extending the term dramatic to cover prose as well as verse.

The child as an actor.—Every child endowed with any imagination is a born actor Even before he is capable of articulate speech he will imitate the things around him by dumb show or gesture. Preyer, the psychologist, observed imitative action in a child four months old, his observation was confirmed on two occasions by Dr. McDougall

Although the strict psychologist will not allow us to call imitation an instinct, yet the disposition to imitate must be innately organised, as it occurs so early in the human being and is present in the higher animals as well as in man In fact it is an indispensable condition of an individual's progress that he should imitate, and it will be found that his capacity for imitation at an early age is a fairly reliable index of his intelligence

The young child is equally at home in the imitation of inanimate things, animals, and persons. He will act as a railway engine, a wild buffalo, or a hunter, with equal skill and lack of self-consciousness As through greater experience, and through the results of reading, his range becomes wider, he will act the part of an Indian chief, of Robin Hood, Hereward, Horatius or the Black Knight

Girls possess this capacity for acting to the same or in even a greater degree. Their preferences lead them rather to imitate persons than things, and the beginnings of the drama are manifested in the conversations they hold with their dolls and with imaginary persons, and in the way they imitate their elders It is to be hoped that when they play school—a favourite game—the imitation of the teacher is an exaggeration!

Whatever theory of play we adopt, the surplus-energy theory of Spencer, the recapitulatory theory, or the theory of Groos, who regards play as an exercise of those activities which will be useful to the individual in the future,—and each theory has some truth in it—it is plain that the spontaneous activities described above are of the nature of play, and hence comes their value as well as their charm.

But there is also another tendency which comes later to reinforce the child's imitative impulses, and that is the desire to excel, which desire probably has its basis in the instinct of self-display or self-assertion, and which in later life is one of the strongest factors making for progress towards individual and social excellence

Some years ago a pamphlet was published strongly criticising the cult of athleticism in the public schools. It deplored the excessive attention given to cricket and football not only by the schools but by the nation in general, and pointed out that it was considered bad form to show any interest in intellectual work outside school hours. To

remedy this state of affairs the author proposed that we should endeavour to transplant the spirit of the playing field into the classroom. The team spirit, where the individual sacrifices himself for the good of the team, the assiduous cultivation of excellence in the individual, not solely for the sake of the individual but for the team, would bring,—the author hoped,—more dignity to intellectual pursuits, and would restore the balance between the intellectual and the physical While agreeing with the author, we may suggest that one method of carrying out his proposals is the introduction of the drama into each classroom, and into the school generally. One of the fundamental principles of teaching is that the function of the teacher is to provide material for the self-activity of the child, so that the child may become an active partner in his own education As the tendency to act is one of the spontaneous, innate activities to which we should, as educators, attach great importance, then it follows that the teacher must provide material suitable for the age and development of the child to assist him to educate himself.

The child as dramatist.—Not only is the child a born actor but he is also a born dramatist. In his games of " Let's Pretend" we can witness the beginnings of the dramatic faculty. A baby can play a game of "Hide-and-Seek,"—a very popular game with young children, in which students of child life see an instance of the recapitulatory theory, which states that the child recapitulates physically and mentally the whole history of the race. In this game, as in other games of the chasing and catching variety, it is stated that the child is passing through the hunting stage

The more formal team games which are popular at a later stage are given as instances of the formation of social groups in the history of man, such as the clan, the tribe and the nation, but the tendency for group play can be seen at an earlier stage, when some boys form gangs and secret societies and play at being robbers and policemen

From the evidences of the child's natural tendencies it is plain that dramatic work, both play acting and play making, can be begun at the earliest stages, and under skilled guidance may become one of the most potent of educational activities

The value of dramatic work is obvious. Children will learn how to speak plainly and correctly—an acquisition of great social value. Their vocabulary and command over language will be increased, they will learn to avoid vulgarisms and slang, and will learn how to speak with natural emphasis, instead of using that artificial variety so often cultivated by the reading lesson The learning of " parts " will provide exercise and discipline for the memory, and imagination will be stimulated and controlled by the assumption of the personality of some other being This assumption of another personality—a kind of self-projection,—is valuable in enlarging the experience and extending the sympathy, and tends to help an individual to appreciate points of view differing from his own.

The combination of the individuals in a class with the object of performing a play enlists the team spirit in a degree perhaps greater than any other school subject The actual construction of the dialogue or play, which can be done by the members of the class under the teacher's guidance, also brings in the idea of corporate work Suggestions are given by the members of the class and the suggestion deemed the best is adopted. Play making gives scope for originality and at the same time is a discipline. The ideas must fit into a certain frame Thus the highest type of imagination, viz , the constructive type, is brought into play.

Not only is dramatic work valuable as regards speech training, but also as regards the acquisition of grace of movement. The teacher who is inexperienced in dramatic work will find, to his surprise, that his characters cannot even walk naturally across

the stage In addition he will discover how difficult it is, especially for boys who have reached the self-conscious stage, to make a natural gesture to emphasise their speech. He will find that his actors do not know what to do with their hands; that they fidget with their feet while speaking, in fact that all their actions are awkward and ungainly. When these errors have been corrected and the young actor has learned how to assume a graceful and correct position, he has received a valuable lesson in a subject almost entirely absent from the modern curriculum, but one which was regarded as very important in former times, namely "deportment"

Playmaking in the class room.—In the early stages the literature lesson provides a good opportunity for dramatisation. Take for example the dramatisation of a fable

THE FOX AND THE CROW

A crow perched on the branch of a tree was holding in his beak some cheese. A fox wishing to obtain the cheese began to flatter the crow saying that he was a beautiful bird The fox also declared that he would like to hear if the crow's voice was as lovely as his feathers The foolish crow opened his beak to show off his voice The cheese fell to the ground and the fox ate it up

DIALOGUE

Fox. Good morning, Mr. Crow! How are you this morning?

Crow. (Talking with his mouth full) Very well, thank you, Mr. Fox.

Fox. I was just thinking, as I looked at you, Mr Crow, what a lovely bird you were. Your feathers shine in the sun, your tail is as beautiful as a peacock's, your bill is beautifully shaped. I am sure that your voice must be wonderfully sweet. Somebody told me that you could sing more sweetly than a nightingale. Do let me hear you sing!

Crow. (Opens his mouth and says) Caw! (He drops what he was holding and the Fox pounces on it.)

Crow Mr. Fox! Mr. Fox! Give me back my cheese

Fox. I'm sorry, Mr. Crow, I can't; it's all gone

Crow. But you are a thief, Mr Fox

Fox No, Mr. Crow, I'll give you something in exchange.

Crow What is that, Mr. Fox?

Fox. Some advice. Never listen to flattery That is very valuable advice and worth far more than a small piece of cheese

Fables such as the *Ant and the Grasshopper*, the *Animals choosing a King* and *Bell the Cat* are very easy to work up into dramatic form (See the simple play of *Bell the Cat* on page 246) Many other examples will suggest themselves. Stories from history and from literature can also be dramatised, and more advanced classes will find useful and entertaining exercise in acting scenes from Scott's or Dickens's novels where the dialogue is already made for them. Suitable passages from *Ivanhoe* are the dialogue between Wamba and Gurth in the forest, the archery contest in the lists of Ashby, the scene between the Holy Clerk of Copmanhurst and the Black Knight. The works of Dickens provide an inexhaustible mine of ready-made dialogue.

But apart from these examples which suggest themselves, it is possible to give life and variety even to a grammar lesson by the judicious use of something akin to dramatisation. For example, let each child represent a word in a sentence to be analysed. Other children stand in front of the class representing the various parts of the sentence,—subject, verb, object, extension of verb. At a given signal each child representing a word leaves his place and stands behind the child representing the parts of the sentence Then parsing by function may be done, e g., "What are you?" "I am the

subject, therefore I am a noun," etc. Of course this practice must not be overdone, but its occasional use is stimulating.

The whole of this preliminary work leads up in later years to the study of Shakespeare.

STAGE CONSTRUCTION

The platform.—The first necessity is a platform. This, if not provided, must be constructed. A very simple way to construct a stage, if the play is to be given in the school hall, is to arrange desks as the foundation and to lay the flooring on top of them

There are, of course, many ways of constructing a stage, and the method employed will depend on the material obtainable and the particular needs of the case, but it is essential that the platform should be a safe and stable structure, and that it should not creak The writer has seen a strong stage constructed for an open-air performance the supports of which were barrels stood on their ends, on the top of the barrels joists were laid and the flooring was placed on the top of the joists. The flooring in this case consisted of heavy planks which were secured at the ends but not nailed to the joists. This stage proved adequate for a usual performance, and for acrobats and weight lifters as well At the conclusion of the performance it was quickly cleared away.

Many schools are provided with a suitable stage, and if such a temporary one as is suggested above is not feasible, it is advisable to obtain the services of a carpenter or a teacher of handicrafts to construct a stage by the use of trestles and floor boards

Trestles are rectangular frames about 6 ft long, made of 2½ in. by 2 in wood, and about 3 ft 6 in. high. In the centre of each trestle is a strut. Enough trestles are placed end to end for the required length, the ends being bolted together Other trestles are placed in lines parallel to the first row, and the parallel trestles are connected at the bottom and top by long pieces of 3 in. by 2 in. wood called ties The ties are holed for bolts where they pass over the trestles. The advantage of this method of construction is that by providing the necessary number of trestles, the platform may be made any required size.

Proceed by laying the first row of trestles along where the front of the stage is to be, bolting the ends of the trestles together. Behind these, and parallel to them, lay the other rows and fix the tie-bars across at the top and bottom. Where the tie-bars pass over the trestles fix them by means of thumb-screws The foundation of the platform is now complete, and the flooring can be laid on the top.

The flooring consists of planks nailed to a 4 in. by 2 in. wooden frame, with joists for strengthening at intervals. It should be made in sections of manageable size and, when laid, adjacent sections should be bolted together

A curtain rod should be affixed at the front of the stage and a curtain or other means used to hide the under part from the audience.

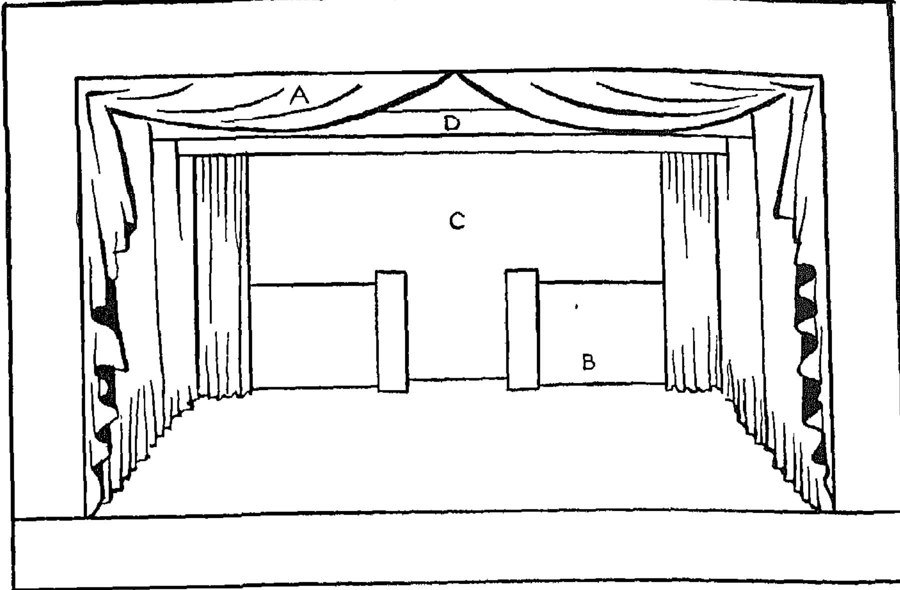
It is advisable, where such a course is possible, to continue the platform right up to the sides of the hall. It will then be easier for the players to make good exits and entrances, and for furniture and properties to be moved; there is less likelihood, too, of noise behind the scenes.

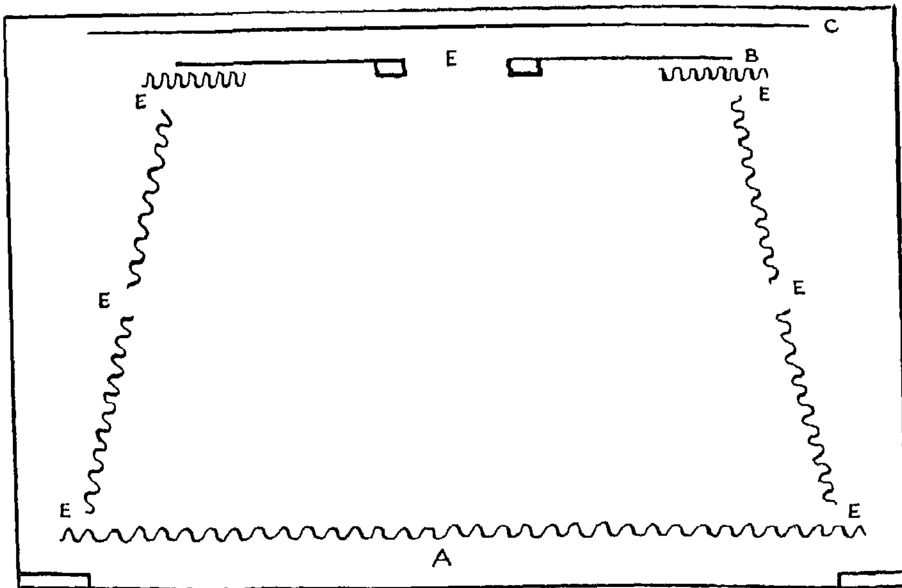
A modern development of the stage, which has been found very effective in small theatres, is the providing of steps leading from the front of the stage into the auditorium.

A group of players passing through the auditorium, and meeting another group on the stage steps is a very effective method. making the audience feel that they are at one with the players. This arrangement is also useful where the stage is small, as it gives more room for crowds and processions.

Back cloths.—The further development of the stage depends on the available funds. The only absolute necessity is a back cloth

PLATE I





A SIMPLE STAGE

A PROSCENIUM CURTAIN B CARDBOARD SCENERY
C BACK CLOTH D SKY CLOTHS E. ENTRANCE

and side curtains or screens to mask the entrances or exits of the players. With this minimum the producer can console himself that he is no worse off than the actors of Shakespeare's day

A great improvement on the foregoing is to have what are called traverse curtains hung on rings about halfway from the front of the stage. These curtains should be divided in the middle, and arranged so that they may be easily drawn aside to disclose the back of the stage

If the wall at the back is plain and smooth it may be distempered grey blue to represent sky, but in most cases it will be found necessary to have a back cloth. This can be made of cheap unbleached calico, and fastened to rollers at the top and bottom. It can be painted to represent the sky, and a good effect of distance can be given by placing in front of the back cloth at a distance of about two feet, a long low screen of canvas about 2 ft or 2½ ft. high, painted to represent a wall

The tops of trees, cut out in cardboard appearing just above this wall, will make it appear that the stage is at a great height, and that the actors are looking over vast tracts of country.

Towers, domes and minarets of a cardboard city seen against the blue background of the back cloth, will give an effective Oriental setting.

A row of lights at the back of the wall will prevent the shadows of the players falling on the back cloth, and will throw the distant landscape into strong relief.

By this arrangement great opportunities of variation of scene become possible. A scene in the palace, or any interior scene, can be played in front of the traverse curtain, while the out-of-doors scene is being arranged at the back.

The front scene can also be varied by manipulation of the curtains.

A suitable chair placed on a small platform on the stage in front of the opening of the curtain makes an effective throne, especially when backed by a strip of curtain of a different colour from the traverse curtains. The above procedure is frequently adopted in presenting Shakespeare at the "Old Vic"

Again, the curtains can be drawn a little distance apart, and in the opening may be fixed a window or a door represented on a frame, on which canvas or unbleached calico is stretched.

There should be also side curtains of the same colour as the traverse curtain stretching from the front to the back of the stage The openings between these curtains will provide the necessary entrances The side curtains should not be set at right angles to the front of the stage, but their lines should incline slightly inwards, thus making the back of the stage slightly narrower than the front. This inclination gives the effect of greater depth.

It will also be necessary to use what are called sky pieces to hide the tops of the curtains. These are strips of cloth, preferably of the same material as the traverse curtains, and are sufficiently wide to hide the tops of the curtains. Three strips about 1½ ft. to 2 ft. wide are sufficient, one hung in front of the back cloth, one in front of the traverse curtain, and one in the front of the stage. The sky pieces are also used to mask devices for lighting.

The proscenium curtain.—With the above arrangement there will be no absolute necessity for a proscenium curtain, but of course it is advisable to have one if possible. In this case it will be necessary to fix two strong wooden uprights, one on each side of the front of the stage and connect the tops with a wooden tie-bar. See that the uprights are properly stayed. The wooden tie-bar at the top should project on each side as far as the side wall so that it may act as a support for the curtains at each side of the proscenium curtain.

About 2 ft. above the tie-bar a strong wire should be stretched across the hall and from it could be suspended a short curtain reaching to the top of the proscenium open-

ing. This will give an appearance of finish to the structure.

Another variation may be made by drawing the traverse curtains a little aside and showing in the background a painted canvas screen suggesting the scene desired

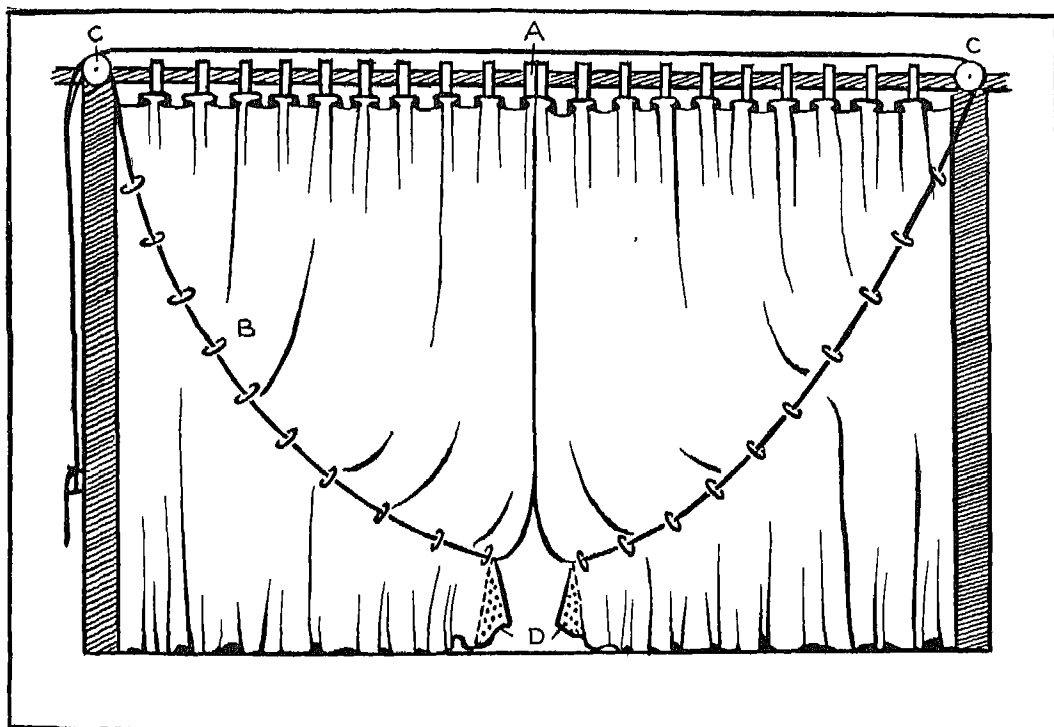
The opening between the curtains may be bordered by an arch cut out in stiff paper or cardboard and painted with brightly-coloured flowers to suggest a tropical scene A cavern or mountainous scene, or the entrance to a church or a Greek porch may be indicated by a suitable treatment of the opening.

Windows and doors of rooms can be suggested in similar ways by drawing the curtains a little aside, and placing in the space a painted " flat," or canvas-covered wooden frame, with the window or door, or fireplace painted thereon. A few canvas flats covered with oak-panel paper will be found useful, in conjunction with curtains, to suggest an interior scene. It is possible to suggest a window by means of a wooden frame, strips of black tape being stretched and nailed across to suggest prison bars or leaded panes

It might be mentioned here that the platform should be covered with a stage carpet made of some soft material to deaden the sounds of the actors' movements

The general method of arranging the lowering and raising of the proscenium curtains is to sew rings on the back of the curtains, starting from the top inner corner and down in a semi-circular curve to the centre, the rings terminating about 3 ft.

PLATE II



PROSCENIUM CURTAIN

A TAPES SUPPORTING CURTAIN B. RINGS SEWN TO CURTAIN

C PULLEYS D WEIGHTED POCKETS

above the level of the stage. The cord that raises the curtains passes through these rings, and over a pulley, being secured by a cleat affixed to the frame of the proscenium.

Two cords are necessary, one for each curtain; but both curtains are manipulated from one side of the stage, as is illustrated in the sketch, the cord from the farther curtain passing over pulleys and being secured to the same cleat as the other To lower the curtain it is necessary only to let go the cords

If the curtains do not fall by their own weight quickly enough, it will be necessary to weight the two corners. This can be done by sewing pockets on the insides and filling these with lead shot. There should be at least a foot of overlap in each curtain so that no gap is shown when the curtains are dropped.

Those producers who make up their minds to adopt the above suggestions and rely on curtains will be gratified to find out that they are following the modern tendency to do away with elaborate scenery and to rely on simplicity.

Elizabethan and modern plays can be effectively represented, period and place being suggested by the costumes and furniture. Variety of scene may be obtained by the methods suggested above or by having more than one set of curtains. To suggest the East, for example, black and gold curtains could be used, and through the opening could be shown the back cloth of brilliant blue with an Eastern city of cardboard in the far distance, lighted by the lights concealed behind the low wall.

The trouble and expense associated with painted scenery can thus be avoided But when the producer desires to make use of painted scenery, a more complicated stage framework must be built

The following instructions should be found useful for this purpose

THE USE OF "SETS"

Where painted scenery is necessary it is usual to have built-up sets, consisting of sections fitted together. Each section consists of a wooden frame on which the canvas is stretched The different sections are called *flats* The flats are laced together by a cord affixed to a screw eye on the right-hand frame of the section and passing over a cleat on the left frame of the next section, thus drawing the two sections tightly together. About a yard from the bottom of each frame are two cleats or two long nails parallel with the canvas around which the cord can be fastened

When a box set like this is put up its angles will make it stand, just as a screen stands, but to give it more stability stage braces are used. These are adjustable supports with a hook at one end which fixes into a screw-eye or a cleat fixed in the frame, and at the other end is a hole through which a stage screw is screwed into the floor (See sketch, Plate III, Fig. 1)

If door and window sections are supported by braces these will give sufficient support for the set.

In planning out the set it is advisable to have the sections as big as possible, as thus it takes less time to build up a scene. For example, sections 6 ft. wide could be used, and 3 ft and 2 ft wide sections could be employed for window, door and fireplace respectively.

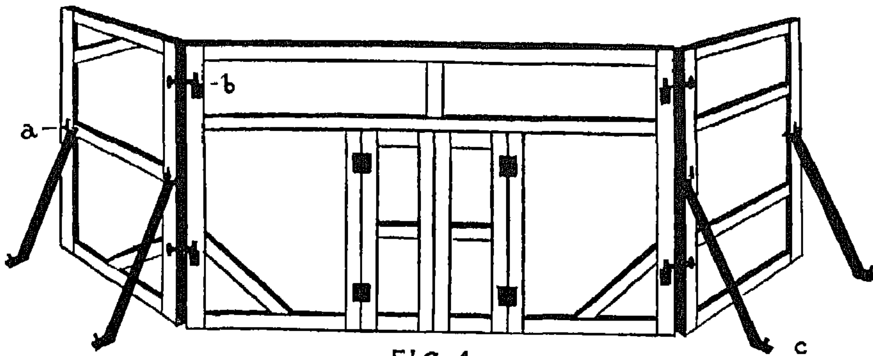
Variety may be introduced into the scene by a regrouping of the various sections. for example the window and door sections may change places

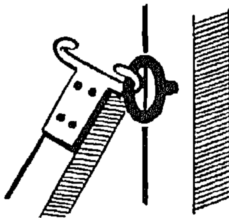
It will be found useful to adopt some standard size for the different sections. All the large sections should be of the same width Doors and windows should be a standard size, then it will be easy for the scenery to be altered by changing a door or a window. By skilful manipulation of sections, rooms of all shapes with corners and alcoves may be presented.

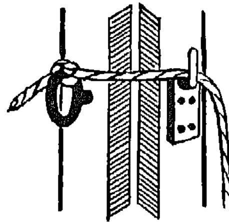
The idea of the manipulation of a box set may be grasped by experimenting with a couple of folding screens.

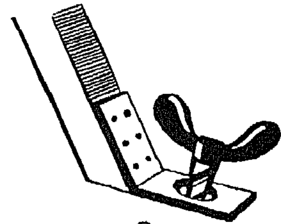
Curtains may also be used in combination with a box set where changes of scene are necessary.

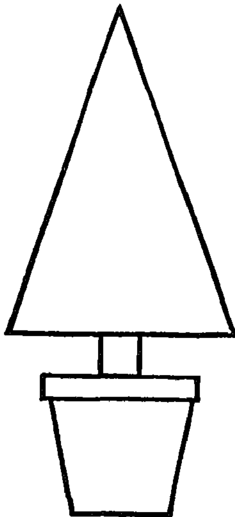
PLATE III

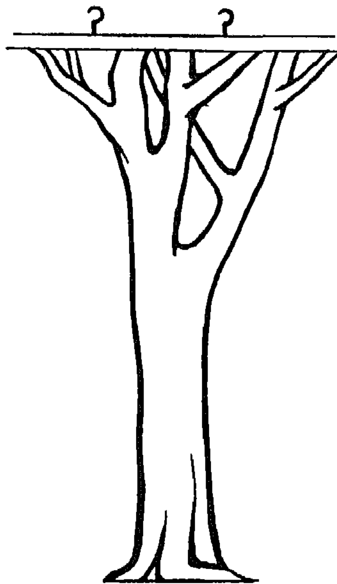


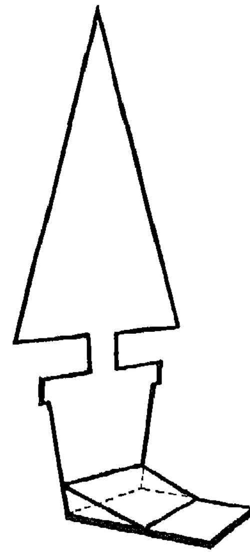












STAGE PROPERTIES

FIG 1 FRAMEWORK OF SET A, B, C, ENLARGEMENTS OF ATTACHMENTS a, b, c, IN FIG 1

FIGS 2a and 2b FRONT AND BACK VIEW OF SCENERY FIG 3 HANGING SCENERY

The great disadvantage in the use of this type of scenery is the difficulty of changing scenes, as unpractised amateurs take a long time to substitute one box set for another. Where there is no change of scene the box set will be found very useful, as it gives the idea of solidity

Some sets are covered with canvas on both sides, and a change of scene can be made by reversing the flats But of course the cleats will have to be taken out before reversing A set which has the canvas only on one side, can be utilised for two scenes by painting the canvas side a fairly light colour, and the side where the framework shows a dark oak colour. If this is done well it will represent a panelled room

When a set which has been used for one performance is unsuitable at a subsequent performance because the play requires different scenery, changes can be made by pasting over the canvas, paper on which the required scene is represented.

SCENE CONSTRUCTION AND PAINTING

The first necessity is to construct the frames of the "flats" The frame and the cross-pieces are made of wood 2¼ in wide by ⅞ in. thick In the centre is a cross-bar, and usually there are corner pieces as shewn in the diagram, Plate III. Frames of the requisite dimensions may be bought completed, or suitable wood may be obtained and the frames constructed by anyone with a gift for carpentry

Canvas or unbleached calico, which latter will be found cheaper, should be stretched on the frames and fixed with large tacks on the side of the frame away from the audience.

The next process is the actual painting. All material must be well sized before this is attempted Size is bought in packets and the directions on the packet should be carefully followed.

One method of priming is as follows Place some whitening in half a bucket of water, and when the whitening has become soft, pour off the surplus water. Next fill up the pail with melting size and stir well. Apply the priming with a whitewash brush and allow it to dry thoroughly before painting.

The colours used for scene painting are known as "distemper" colours, and are bought in the form of powder, water only being added to the powder. Size must be mixed in with the colour to make it adhere to the material. Most of the colours are cheap, but some, e g green, may be more expensive. But it is usually possible to obtain a cheaper substitute.

The paint when well mixed ought to be of the consistency of thick cream.

The amateur scene painter can learn only by experience which colours to use, as scene painting is a separate art. Broad effects and not minute detail should be aimed at.

The purpose of the scene is merely to suggest the environment. Then it must also be borne in mind that the scene will be viewed in the blaze of artificial light, and the colours which look well in daylight may in those altered circumstances be quite ineffective

To ensure success, the best thing to do is to examine closely some scenery painted by an expert, and to copy it, noting how the effects are produced On a close view the amateur will be astonished at its seeming crudity, but observing it from a distance, he will find that all the necessary effects are there.

In an outdoor scene sunlight effects are obtained by a mixture of yellow ochre and chrome yellow.

Shadows are never indicated by crude black, but usually by a mixture of crimson lake, Prussian blue and a very little black. Blue, brown or purple may be used for the same purpose.

First the outline of the picture should be sketched out on the scene with charcoal, and then the outlines should be painted in, after which the details can be added.

Brushes of various sizes will be needed: a large flat brush or a whitewash brush for

priming and for painting large surfaces such as sky backgrounds, and some smaller flat brushes for the more delicate work.

A good plan is to draw a small sketch of the scene to be painted, and to divide this sketch into a number of squares. Divide the scene also into the same number of squares by drawing lines across it with chalk, and transfer the design, square by square, to the canvas

The usual method is to start at the top of the canvas and work downwards, except in scenes which demand the use of perspective, when it will be found advisable to start in the middle and work towards the sides

Property making.—In an earlier part of this article it has been shewn that use may be made of cardboard to indicate a distant scene. Very often it is necessary to have trees or other objects in the foreground, and for these beaver board, three-ply or thin wood will be found useful.

In a garden scene the trees may be represented in formal shapes The shape of the tree should be cut out in wood and painted on one side, the foot of the trunk being fixed in a wooden stand which should be weighted on the side away from the audience. The only tools necessary are a fretsaw, or chisel and mallet. (Plate III., Figs 2a and 2b)

A forest scene can be constructed by means of *scrim*, a coarse hessian. Cut the scrim into long strips to represent the trunks of trees, and shape them at the top into a few branches Nail the branches on to wooden battens extending across the ceiling of the stage and weight the bottoms of the trunks. (Plate III., Fig 3) Paint the scrim to represent tree trunks, and a very effective forest will be the result. The forest can be easily cleared away, and unlike canvas scenery and box sets, needs little room for storage

A fallen tree trunk can be made by cutting two circular discs, one a little larger than the other, and nailing laths of wood to join them Pad the outside of the laths and then cover with scrim and paint.

With the help of a packing case, and a few simple tools, seats, furniture and all sorts of properties may be manufactured

Pillars of marble or stone may be made in a similar way to that advocated for tree trunks, except that, in this case, it is not necessary to make them circular There should be half-circular discs at each end of the pillar connected, as before, by laths. Put fine wire netting over the laths, stretch unbleached calico or canvas over the front, size well and paint.

Very fine effects can be obtained by placing four pillars, one at each corner of the stage. The side curtains and the traverse curtains can then be supported on rods connecting the tops of the pillars When the traverse curtain is drawn aside the distant scene is made more effective by being viewed through the pillars in the foreground.

Pillars which are to support the curtains should be made more strongly than those intended for ornamental purposes only. They should be constructed of wooden battens 2 in by 2 in The pillars may be made either circular, or square. Only the sides turned towards the audience need be covered with canvas and painted.

Swords and daggers can be made out of wood and silvered over. Broom sticks are useful for spear handles, the spear head being shaped out of wood and silvered over.

The properties necessary for a regal banquet can be manufactured by obtaining ordinary glasses of the requisite shape, and painting them with gold or silver paint

As the food for a stage banquet sometimes causes difficulty, a few hints are given here·

To suggest meat or poultry use slices of banana, for cakes, white of egg puffs, sandwiches, white felt cut into squares and painted red on one side.

Cold tea with a little red colouring may be used for wine, cold coffee for beer, water coloured with burnt sugar, or weak tea will do just as well for whisky

Water tinted with the differently coloured icing sugars will provide drinks of all colours.













PERIOD COSTUMES—GIRLS

A 11TH CENTURY B 14TH CENTURY C 15TH CENTURY
D 16TH CENTURY E 17TH CENTURY F 18TH CENTURY



Period Costumes—Boys

A 11th Century B. 14th Century C 15th Century
D 16th Century E 17th Century F. 18th Century

COSTUMES AND MAKING-UP

The easiest and most expensive method of obtaining costumes is to hire them from a costumier, but most schools will find this solution of the difficulty beyond their means.

Another method is to ask each performer to provide his own costume. In this case it is necessary for the producer to give accurate details of each costume, or the result may be a mixture of periods and a clashing of colours

Where funds are low, the help of lady friends and parents should be solicited, and it will usually be found that they will render valuable and sympathetic assistance.

The following general hints may prove useful.

As in painting scenery, the colours of the materials should be tested by stage lighting, and it will be found that many shades which look well by daylight do not appear to advantage in artificial light, for example some shades of yellow look white, and blues and greens look darker and duller It is wise to choose rich full colours rather than delicate shades. Broad effects must be aimed at Variety of colour of the dresses adds interest to the stage picture. The producer need not fear that colours will clash if he goes in for clear full colours.

Materials also must be studied. Very good effects may be obtained from inexpensive materials Coloured sateens may be used where the dresses are to be stiff, but where the material is to hang in long and graceful folds, cotton, or wool, or silk crêpe is more suitable

In dresses of the Classical, i.e the Greek or Roman periods, it is necessary to have a soft material which will hang well, whereas ladies' dresses for Tudor, Stuart and Georgian times, must be of a stiff heavy material.

With regard to the designs for the dresses of different periods, the reader must be referred to detailed works on the subject. Greek and Roman dresses are profusely illustrated in the drawings of Flaxman, and in Classical encyclopaedias, and valuable information with regard to ancient Egyptian and other dresses is contained in a book entitled *Ancient Egyptian, Assyrian, and Persian Costumes and Decorations*, by Houston and Hornblower, published by Black.

Information with regard to Roman and British costume is contained in *Everyday Life in Roman Britain*, by Marjorie and C H. B. Quennell, and *Everyday Things in England*, Vols. I and II., by the same authors brings the history and development of costume from 1066 to 1799

The most valuable book with regard to costume from 1066 to Modern Times is *English Costume*, by Dion Clayton Calthrop, published by Black.

On the subject of arms and armour, the reader is referred to *British and Foreign Arms and Armour*, by Charles Henry Ashdown, published by Black

All the above mentioned books are profusely illustrated, and the producer who consults them is not likely to be guilty of anachronism with regard to dress.

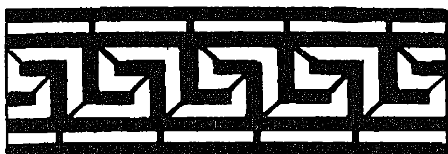
Armour may be represented by American cloth painted with aluminium or gold paint, or silver and gold American cloth can be obtained

Helmets are difficult to manufacture. It is possible for anyone who is skilled to make them on the foundation of a hat shape, but it is better to buy helmets ready-made of papier mâché.

The uppers of shoes and the straps of sandals can be cut out of American cloth. Decorative effects can be secured by silvering or gilding. The help of a shoemaker will have to be secured to stretch the uppers to a leather sole.

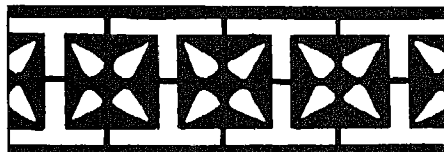
In all gilding and silvering it will be found cheaper to buy powder and medium from the oil and colour merchant. Aluminium powder for silvering is cheap and very effective, and copper powder will give the gold effect at a much lower rate than ready-prepared gold paint

Hoops and dress improvers can be made of wire, but for crinolines cane will be found more suitable.

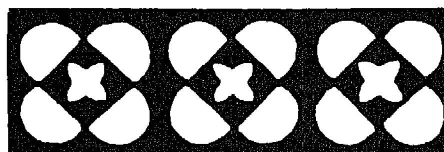

A


B

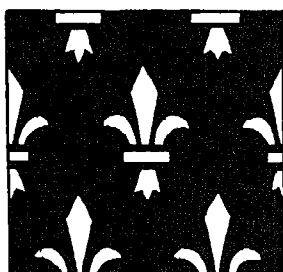

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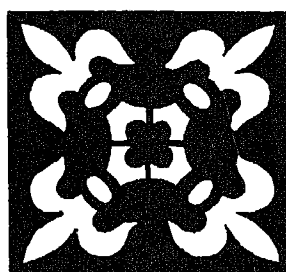

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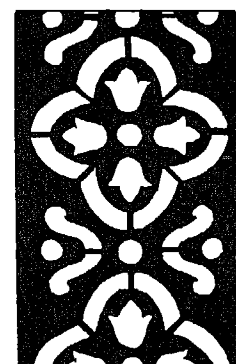

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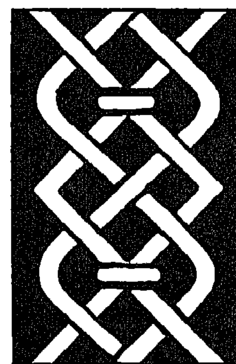

G


H


I


J


K


L

SIMPLE STENCIL PATTERNS

A & B GREEK   C & D NORMAN   E F G H & I MIDDLE AGES

J K & L. ELIZABETHAN

Hats of many shapes are made of buckram

Whenever patterns are used to ornament dresses, they should be bold and striking; small, intricate and delicate patterns do not show up well. The material to be ornamented should be plain, and the pattern should be of a contrasting colour, and should show up in a striking fashion against the plain background.

The borders of garments, especially of Greek and Roman costumes, should be ornamented. The design may be stencilled in gold, silver, or black or any contrasting colour. If preferred the design may be cut out of other material and sewn on.

Stencil patterns can be cut out of cartridge paper and stiffened by means of knotting varnish Care should be taken that the design is of the correct period (See Plate VI)

If a cloak is a part of a costume, its colour should contrast with that of the under-dress.

In case of any difficulties with regard to costume, the producer is advised to write to Citizen House, Bath. The secretary will supply all necessary information Costumes can be hired from that institution at a much lower rate than that charged by professional costumiers.

Making-up.—Many schools and amateur societies employ an expert to effect the making-up of the faces of the characters, but this practice is not necessary, as the art of simple make-up can be acquired after a few experiments. The first requisite is grease paint, which is supplied in sticks of all colours, numbered 1 to 20. A short account of the more important of these may be useful:

No. 1. Very light, for ladies of delicate complexion.
No 1½ The usual colour for ladies.
No 2. For ladies
No. 2½ For young gentlemen.
No. 3. The usual colour for gentlemen.
No. 3½. Suitable for middle-aged men.
No. 4. Dark, suitable for rustic, soldier or sailor
No. 5. Sallow, suitable for very old men
No. 5½. For Chinese characters.
No. 8. For Japanese characters
No. 9 For Red Indian.
No 10. For Hindoo
No. 12. For Negro.
No. 19. For Spaniard.
No. 20. White for clowns' faces.

A stick of carmine is also necessary for lips and cheeks, and medium blue for unshaven chins. In addition, there are lining sticks of various colours, for suggesting wrinkles, etc. Nose paste is used for altering the shape of the nose; face powder, preferably cream or tinted rather than white, for toning down the crudeness of a make-up and removing the greasy look, spirit gum for affixing hair to the face, and crêpe hair for making beards, etc.

Properly fitted boxes containing all the necessary sticks may be purchased, but it is cheaper to buy the sticks required separately and keep them in a suitable box.

The following should meet all usual requirements.—

(1) Sticks of grease paint Nos. 1½, 2, 2½, 3, 4.
(2) A stick of carmine for lips and cheeks.
(3) White, black, blue, and lake lining sticks.
(4) An eyebrow pencil.
(5) A powder puff.
(6) Crêpe hair, white, black, brown, and grey.
(7) A bottle of spirit gum.

For the details of making-up the reader is recommended to consult one of the many books on this subject published by theatrical firms. The following few hints will be found useful to the beginner.

First select the colour for the ground work (e.g. No. 1½ or 2 for a lady, 2½ or 3 for a gentleman) and apply the stick with a fair amount of pressure to parts of the face and neck. Rub in with the fingers until a smooth colour is obtained, being careful to cover all parts of the neck which show. For the



VARIOUS HISTORICAL COSTUMES

A GREEK B KNIGHT TEMPLAR C JESTER
D ROBIN HOOD E HERALD F PIRATE

cheeks apply carmine high up and rub in with the fingers to blend with the ground colour In making up the eyes it is usual to start with the black lining stick from the corner of the eye next to the nose, and draw a light line immediately under the eyelashes. Terminate this line slightly beyond the end of the eye. Now take the blue lining stick and treat the eyelid in the same manner, drawing the line immediately above the eyelashes, and continuing it till it meets the black line. A small dot of red at the inner corner and a light line of red where the blue and black lines meet, if carefully done, will improve the effect.

The use of the lining stick for wrinkles needs practice. It is not necessary for a juvenile make-up. For suggesting old age, perhaps the best counsel to give to a beginner is to follow the natural wrinkles of the face and to line them with a lake liner The performer may be told to wrinkle his brow or wrinkle up his eyes, smile, etc., and the wrinkles can be followed.

The eyebrows can be accentuated by the black liner, if too prominent they can be modified by painting them out with grease paint.

The lips should be touched up with carmine or lip stick.

In the case of affixing a beard or moustache to the face first wipe the lip or the chin so that it is free from grease paint. Then tease out a sufficient amount of crêpe hair, apply spirit gum to the face and hold the hair in position for a short time With a small pair of scissors trim to the desired shape. The make-up of an old man may be made more effective by "removing" some of the front teeth. This may be done by drying with a towel the tooth or teeth, and painting thinly with a black liner The paint can be removed afterwards without difficulty by wiping it off with a towel.

The hands and arms must not be forgotten, especially when boys are playing female parts. A light grease paint can be used, and then powdered over.

Wigs add much to the effectiveness of the make-up. Cheap wigs can be bought, but good wigs, if required, must be hired When a bald wig is used it is important to see that the join does not show, grease paint or joining paste may be used.

LIGHTING

For evening performances efficient lighting is necessary. Where electricity is available the problem is much simplified, but failing electricity, gas or even oil lamps may have to be used

Whatever form of lighting is decided on, it is essential that the lights should be properly screened from the audience, and protected by a wire guard so that danger of fire is averted in the case of gas or oil, and so that breakage of the bulbs is impossible when electricity is used.

A brilliant light can be produced from gas by the employment of incandescent mantles, and if oil is the illuminant the incandescent type of lamp should be employed if possible.

The simplest lighting outfit would consist of footlights, these being powerful electric lamps reflected by tin reflectors. In addition there should be a couple of powerful electric lights screened from the audience, and hung a few feet in front of the stage to illuminate the upper part of the scene. Care should be taken that the headlights do not obstruct the view of the audience in the gallery or upper parts of the house.

The above arrangement is the minimum advised. Lighting can be made more effective by the use of parallel light battens, i.e., lights arranged on battens and hung above the stage, one batten being screened from the audience by the top front of the proscenium, and the others by the sky pieces.

The number of battens used will vary with the depth of the stage, but three battens should be enough for most stages, the first being directly behind the proscenium front, the second about one-third of the depth of the stage away from this, and the third

batten about two-thirds of the distance from front to back

In addition, where the stage is planned as advised for the use of curtains with the minimum scenery, a row of lights can be placed behind the wall to light up the back scene.

Although footlights are employed in most theatres at the present time, there is a growing opinion among modern producers that they are not necessary and should be abolished The reason given is that they are unnatural, for as all the lighting in Nature comes from above, the employment of footlights throws unnatural shadows.

In cases where footlights are dispensed with, it is necessary to use powerful headlights, or a row of lights screened from the audience hung about level with the top of the opening of the proscenium, and arranged so that their light falls downwards on to the stage. This row of lights should be about 6 or 8 ft in front of the stage

Alternatively, powerful floodlights placed on each side of the hall should be used, each being directed towards the centre of the stage

Much can be done to make a play more successful by the use of lighting effects. Here the use of gas has an advantage in that it can be raised or lowered at will. It is possible to produce the same effects with electric lighting by the use of what are called "dimmers," but these are a luxury.

Good effects can be produced by having the lamps on the footlights and light battens red (or rose), blue (or green), and white alternately, the various coloured lights all being controlled by separate switches This arrangement, however, makes the wiring system rather complicated.

A simpler method of obtaining colour effects is by using strips or rows of lights arranged on a strip of wood which can be carried from one place to another and can be plugged in to the nearest plug socket available. When a change of colour is required a set of differently coloured bulbs can be placed in the lamp sockets

In the use of coloured lighting it must be remembered that some coloured lights will render ineffective all colours of costumes on the stage For this reason yellow light should not be used, but amber, which has a warmer tint; again, rose should be used in preference to red

Not more than two colours should be used in addition to white light. Rose light thrown from one side of the stage and blue from the other make a beautiful effect, or rose mixed with amber may be used.

In addition, or instead of the above mentioned arrangements, colour variation may be produced by the use of the floodlights. A movable floodlight consists of a metal box mounted on a stand about 4 ft. high, containing a powerful electric lamp. (Plate VIII. Fig. I) Like the strips, these floodlights may be moved about as required and plugged in to the nearest socket. The front of the box is fitted with a groove into which coloured slides may be slipped

The floodlight has this advantage over the strips, that the colour may be quickly changed The new coloured slide can be slowly slid into its place before removing the former slide, then the former colour slide can be gradually slipped out.

It is not difficult to manufacture a floodlight box from an ordinary biscuit tin. A hole is bored in one side to take the lamp socket, and some holes should be bored in the top for ventilation. A groove made of thin tin should be placed at the top and bottom of the opening of the box to take the colour slides.

These floodlights are also very useful when it is necessary to throw a strong light on a part of the stage, and keep the rest in darkness. (Plate VIII. Fig 2.)

General hints.—The separate switches controlling all the lights should be on one board in a convenient place in the wings. There should also be a master switch controlling all the lights in the auditorium and on the stage, as what is called a "blackout" may be necessary to suggest a change

of scene without lowering the proscenium curtain

The stage should never be left long in darkness. Even in the darkest scenes the light should never be so dim as to obscure entirely the features of the actors

A night scene may begin in obscurity, but once this is suggested the lights can be gradually raised. If the audience cannot see the actors distinctly they soon lose interest in the play, and once lost it is difficult to recapture interest

HINTS FOR THE PRODUCER

Strict discipline must be enforced in the wings and behind the stage generally during the performance. Actors must not be allowed to wait in the wings unless they are just about to go on the stage. Absolute silence must be observed by all in the wings. It is exceedingly bad practice to allow characters to peep through the opening of the proscenium curtain before the performance All the actors should remain quietly in the dressing room until their turn comes to be called for entry.

Speech.—It is most necessary that the actors should be heard plainly. If possible all or most of the rehearsals should take place in the hall or theatre where the play is to be produced.

The producer should stand at the far end of the hall in order to judge whether his

PLATE VIII

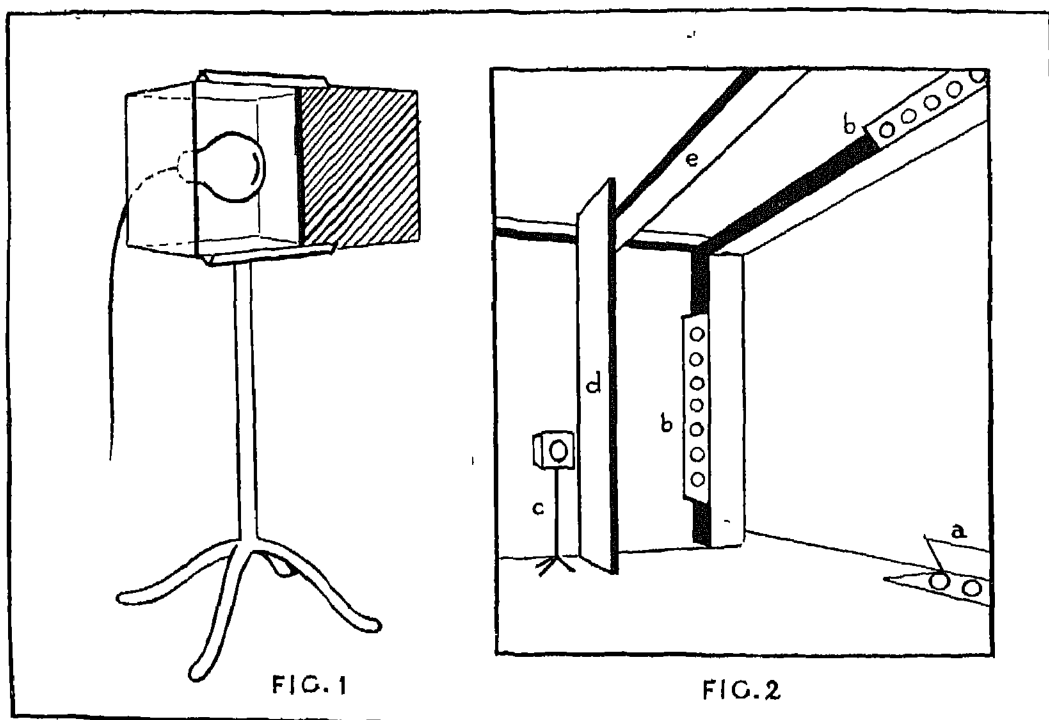


FIG. 1. FLOODLIGHT

FIG 2
a FOOTLIGHTS
b PROSCENIUM LIGHTS
c FLOODLIGHT
d WING
e SKYCLOTH

actors are audible. The usual rate of speaking will have to be slowed down considerably, especially in verse-speaking, and a careful pronunciation of consonants, especially those that come at the end of a word, must be insisted upon

A good rule to observe is· Take care of the consonants and the vowels will take care of themselves

Furthermore, the producer must be careful to see that his actors keep up the intonation at the end of a sentence, otherwise the last part of a sentence is often lost

As a rule nouns and verbs should be stressed rather than adjectives Adverbs, prepositions and conjunctions should not usually be stressed

When a word needs to be emphasised strongly, the required stress can be obtained by making a slight pause before the word, e.g They are not English.

Generally, tragic passages should be taken slowly, while the *tempo* of comedy should be quicker, and farce quickest of all

In rehearsals it is advisable to let the actors use their books for some time. It is essential that they should learn their parts with the right pronunciation, enunciation, emphasis, and intonation, as it is difficult to eradicate errors of speech established by premature learning of parts.

Gesture and movement.—Gestures should be few and expressive, smooth and not jerky, and carefully timed with regard to the speech No gesture at all is better than one made in a half-hearted manner.

One of the chief difficulties of the beginner is to keep his hands and feet still while speaking. A good rule to observe at first is. Finish talking before walking, and finish walking before talking. When moving, the up-stage foot should be moved first. (*Up-stage* means towards the back cloth, *down-stage* towards the footlights)

In kneeling, kneel on the down-stage knee, keeping the other foot on the ground. The up-stage hand should also be used in making a gesture, but if the down-stage hand is used, the actor should turn slightly to the right or left, so that the action can be plainly seen by the audience

Entrances and exits should be made in a decided manner. A good exit can often be made by saying a part of the concluding sentence, walking decidedly towards the exit, then turning round towards the audience, and saying the last few words slowly, e.g. "The king shall have my service, but my prayers . . for ever and for ever, (*pauses and walks towards exit, turns round and concludes*) shall be yours."

(*Exit quickly.*)

The actor should avoid as far as possible turning his back to the audience, in turning a half-left or a half-right turn will usually be all that is necessary When speaking, this rule must be specially observed, as speeches addressed to the back cloth are not often audible throughout the theatre.

When speaking, an actor should advance towards the front of the stage, hold up his head and address his remarks to the people in the back row of the audience. If he is talking to another actor his face must not be constantly in a sideways position He should speak to the front giving an occasional glance at the other actor The general rule here is· Look to the front

All movements should suit the character represented. The movements of old people should be slow, of young people energetic; when boys are taking female parts the producer will have to be careful to see that they walk and sit properly.

The facial expression of the characters spoken to by other actors should vary with whatever is communicated They should not look as if they have heard it all before and know what is coming.

If actors or the chorus have to move from one part of the stage to another they must be well drilled. A professional producer informed the writer that in rehearsal he made the actors move by counting numbers, even counting the number of steps which each actor was allowed to take. In order to get exactness of movement, it is advisable

during rehearsal to chalk on the stage the exact position of any articles of furniture that will be required, or to have these articles represented by adequate substitutes

All exits and entrances should be similarly indicated by chalk marks.

The producer must pay special attention to grouping when there are several characters on the stage at once From the point of view of the audience, the stage scene is a picture, and the chief point of interest should be in or near the centre.

The lesser parts should be grouped artistically in relation to the centre. The most important characters for the time being, i e, those doing the greater part of the speaking, should then take the central position. The stage picture should be balanced by the disposal of the other characters in the background. As the scene progresses the grouping will change, but there must always be some idea of balance evident in the grouping In moving, no character must walk in front of an actor who is speaking

In rehearsals, the actors should always be provided with the necessary properties or efficient substitutes, e.g , sticks for swords and spears, so that they will not have a feeling of strangeness at the final dress rehearsal.

There should be at least one dress rehearsal before the final performance. The producer can then note any defects and remedy them in time

It should be remembered that these hints are intended to serve only as a general guide. Occasions will no doubt arise when they must be modified. If they are kept in mind they ought to prove useful and helpful in securing the great reward of the producer's labour,—a successful performance.

References.—Further information with regard to the various topics treated in this article may be obtained from the numerous books published on these subjects

In particular the writer wishes to acknowledge his indebtedness to the following books —

Amateur Stage Management and Production, by Charles S Parsons (Pitman)

Secrets of Scene Painting and Stage Effects, by Van Dyke Browne (Routledge)

Play Production for Everyone, by Monica Ewer.

Various Pamphlets covering the whole field of Play Production and Catalogues of Plays (Citizen House, Bath).

Book of Play Production for Little Theatres, Colleges and Schools, by Milton M South (Appleton).

The Secrets of Making Up, by Brough and Slater

History of Every Day Things in England, by Marjorie and C. H. B Quennell—2 vols. (Batsford)

English Costume, by Dion Clayton Calthrop (Black).



ELOCUTION

THE dictionary defines Elocution as "The art of delivering a discourse impressively in public, the management of the voice and gesture in speaking" This definition rather unduly extends the scope of elocution, in that it includes gesture; an inclusion unwarranted by the derivation of the word, and generally omitted in the treatment of this subject.

This article will limit the scope of elocution to the art which aims at clear, correct, impressive, and intelligent expression of spoken English, whether the subject matter is merely conversational, or rhetorical prose, or epic, lyrical or dramatic verse.

There is no doubt that the spoken word has been very much neglected by our nation We are proverbially a nation of bad speakers Even those professions which aim directly at, and whose influence depends on the cultivation of speech, viz., the Church, the Legal profession and the Stage, have recently suffered from a great deal of criticism on this point A carefully prepared sermon or speech often totally fails to impress, owing to slovenly articulation, bad tone, irritating mannerisms, or inaudibility through faulty voice production.

That the present unsatisfactory state of affairs is likely to become worse is a danger against which every teacher must be on his guard. Years ago the elementary school was almost alone in endeavouring to cultivate speech. There were frequent formal reading lessons in which each child read a paragraph, afterwards having his performance criticised by the teacher and often by the scholars. There was also the recitation lesson, in which each child learned a number of lines of poetry and was expected to render them correctly with due regard to emphasis

In spite of the obvious defects of these methods, especially in their restriction of the range of the pupil's knowledge and appreciation of poetry, in spite of the harm they did, yet they had the beneficial effect of giving intensive attention to a passage of prose, or poetry, and aimed at perfection of vocal expression within narrow limits. The defect of the modern methods is that, while widening the range of the pupil's vision, while increasing his knowledge in extension, they neglect *intensive* study to a dangerous extent. The Dalton Plan and similar methods have the defect, among many advantages, of relegating the oral methods still further into the background.

Again, the examination system which dominates our secondary schools emphasises written work, at the expense of oral, and so, to a great extent, neglects the spoken word, while perhaps it is not unjust to some of our public schools to state that their danger lies in a tendency to "affected" English.

One of the chief reasons why English people do not pay more attention to speech is no doubt psychological. As a nation we are extremely self-conscious Mr. Chesterton has pointed out that a group of Germans can unite with the utmost seriousness and sing about a dead child or a faithless maiden. But a group of English people could not do that, "even for beer." The English man like the English schoolboy is dreadfully afraid of making a fool of himself by any display of emotion, or by differing too much from the "herd" of his badly-speaking fellows.

In the future there are excellent grounds for hope

The influence of Broadcasting with respect to speech is, on the whole, good It brings into the homes of a vast multitude patterns of speech made by educated people, thus providing a standard for imitation, much as in the old days, when, in each parish in the land, the Parson and the Squire set the

pattern of standard or educated English, which pattern, no doubt, insensibly modified dialectical peculiarities, and exposed vulgarisms

On the other hand the influence of the "Talkie" film was frequently detrimental As regards words, phraseology and pronunciation, our language was in some danger from the unconscious or conscious imitation of peculiar Americanisms perpetrated by the characters appearing on the American manufactured screen. Fortunately there is now much improvement in these matters, and excellent examples of standard pronunciation of English are provided both by the American films and especially by those produced in England.

Before tackling the problem of Elocution in detail, it is necessary to premise that no amount of practice of mechanical aids is an adequate substitute for a naturally good voice and a sympathy and understanding of the matter to be rendered. Exercises are necessary, faults of breathing, tone, articulation and emphasis can be remedied, understanding and appreciation may be fostered However, interference with a natural and sympathetic delivery will tend to produce that artificial rendering, that "wooden" tone, that false emphasis, which sometimes cause a serious recitation at a social gathering to be either a horror to be endured, or an occasion for surreptitious merriment.

THE ELEMENTS OF ELOCUTION

Breathing.—In order to speak well or sing well it is first necessary to have control of the breath. Breathing exercises should be given with the object of increasing chest capacity, the elasticity of the lungs, and the control over the breath. It is important to notice also that the breathing during speaking, although it implies more effort than that unconscious type of breathing which functions in our daily life and during sleep, should be of a normal character. When control is obtained the breathing during speech should be automatic, and apparently effortless.

The voice.—When the two vocal cords approach each other and the air is expelled between them, causing them to vibrate, a noise is produced which is called voice or sound The pitch of the sound may be high or low according to the number of vibrations of the cords per second. In the speaking or singing voice the ear acts as a control on the pitch of the sound.

Tone.—The tone of the voice depends on the shape of the cavities around the vocal membranes, particularly the cavity of the mouth and the nasal cavity. The tone of a voice may be "breathy," "throaty," or nasal.

The "breathy" tone results from drawing the vocal cords together too late. The sound should begin absolutely at the same time as the breath is expelled through the vocal cords. The "breathy" tone which often is distressing to an audience on account of the difficulty of hearing, is also uneconomical to the speaker, as a great deal of breath is wasted It may be the result of bad habit, or of overstrain of the voice due to want of training.

The "throaty" tone sometimes characterised as "talking with a plum in the mouth" is due to wrong position of the tongue, which is placed in a position either too high or too low.

The nasal tone is produced by bringing sounds which ought not to be nasalised through the nasal cavity, as in the case of some Cockney and American speakers The term is also applied incorrectly to the practice of closing the nasal cavity altogether, resulting in the pronunciation of *m* as *b* and *n* as *d*, e g. speaking as with a cold in the head, when *man* would be pronounced *bad*.

The vowels.—The sounds produced by the vocal cords can be modified by the varying shape of the mouth as it passes from a wide open to an almost closed position. Such modifications are called vowels.

It is very difficult for the teacher to produce correct speech in children from

homes where English is spoken badly, without a training in phonetics, and the use of the phonetic script, by which the child can be shown his error of pronunciation

Thus the Cockney child will say: *Awee sawr er rahnd pile*, for *I saw a round pail.* The teacher with a knowledge of phonetics can show the child in sound writing what he actually said. Correct production of the vowels is of tremendous social importance Bernard Shaw in his play *Pygmalion* has even gone so far as to maintain that social distinctions between class and class are mainly speech differences. There is no doubt that the outside world very often judges the culture of a person by his pronunciation of vowels, and for the production of a good pronunciation in those who have not had the chance to attain it by the imitation of cultured speakers, practice in the analysis of sounds and the cultivation of a sensitive ear are necessary.

The space at the writer's disposal prevents a more lengthy treatment of this important subject. All that can be done is to call the reader's attention to a few guiding principles. To produce all English vowel sounds the tongue should never be drawn back from the lower front teeth. There is no need to pull faces in practising vowel sounds The corners of the mouth should never be drawn back from their natural position.

It should be noticed that in English the pronunciation of a vowel depends on where the stress falls in a word. Thus in the word *family* the stress falls on the first syllable, while in *familiar* and *familiarity* the stress is on the second and fourth syllables respectively. Note that in the first word the stress falling on the first syllable gives the vowel its proper value, whereas when the vowel is unstressed its sound is the same as that heard in the word *the.* There is a tendency for unstressed vowels in English to approximate to this sound

In the treatment of dialect it should be remembered that a dialectical variety of English is as good English as what is called standard But when speaking in public, it must also be borne in mind that all educated speakers conform more or less to a standard The teacher must try to hold to the middle course between vulgar and ultra-refined English It has been stated that the line *Praise Him for His grace and favour* would be rendered by the vulgar speaker: *Prize Him for His grice and fiver,* by the ultra-refined *Preeze Him for His greece and feever.*

Articulation.—Articulation is usually taken to mean the paying of proper attention to the parts of a whole. In the case of a word it would mean the proper pronunciation of each element or syllable; in the case of a sentence it means that due attention and importance should be given to each part. Proper articulation will aim at clearness of diction, more careful speaking, the avoidance of slovenliness generally. In careful speaking very often the quality of an unstressed vowel which has become the sound of *e* in *the* will tend to be restored. Consonants wrongly pronounced will be given their true value. For example, in little children attention to proper articulation will correct such mistakes as *free* for *three, fin* for *thin, weally* for *really* Incidentally in older children the analysis of the sounds of a word will prevent the writing as well as the saying of *goverment* instead of *government, articifer* for *artificer*, and should have a beneficial effect on spelling wherever mistakes are made owing to faulty analysis In the case of long words it is often advisable to let the pupils pronounce each separate syllable, giving the vowels their proper value, i e, their stress value, then to say the whole word giving the ordinary pronunciation.

Thus the word *accommodation* can be pronounced ac-com-mod-ation, then as a whole

Colloquial speech may also be analysed, and such barbarities as *Wot cher meen?* for *What do you mean? nacher* for *nature, juty* for *duty, ajew* for *adieu* may be corrected. In fact many cultured speakers would be

horrified to see in phonetic script what they really say In speaking, reading, or reciting a sentence one of the commonest faults is a "jerky" delivery A smooth rendering on the whole should be the aim, one sound gliding into another For example, in ordinary speech the collision of two vowels is avoided as far as possible by such devices as *an apple* instead of *a apple*, which latter produces an interruption of smoothly flowing sound, or, as it is called, a *hiatus* Similarly, the pronunciation of the word *the* is modified before vowels to avoid a hiatus. Poets use what is called elision for the same purpose, e g , *Th' Apostles' glory let us sing*. A break in the smoothness may be caused also by the juxtaposition of consonants, e.g , *Jump, Peter! Not Tom.* An extreme example from Sheridan's farce *The Critic* gives several intentional breaks *The linnet, chaffinch, bullfinch, goldfinch, greenfinch.*

While there are some speakers who have the irritating habit of "mouthing" or over-pronouncing their consonants, e.g *She's deader, my lorder,* for *She's dead, my lord,* yet there are occasions when for the sake of expression of meaning a consonant should be sharply pronounced and a break made In the example *He had always expressed the utmost contempt for her personal abilities*, the *t* in contempt should be pronounced with force. Careful pronunciation of the end consonants of words combined with keeping up the pitch at the end of a sentence (instead of, as many speakers do, swallowing the last words of the sentence) does much to make a speaker distinctly audible in a large hall without a great expenditure of effort on his part

Emphasis.—The right allocation of emphasis is a powerful factor in making an author's meaning clear Emphasis adds, as it were, the light and shade to speech. It may be given by a more forcible utterance of the word or phrase, by intonation, or raising or lowering the pitch of the voice, or by dwelling on the word or phrase, i.e , saying it more slowly than the unemphasised parts

The proper use of emphasis depends on a complete understanding of, and sympathy with, the matter read or recited. It is better, on the whole, to under-emphasise than to over-emphasise, as the latter is resented by those who understand, as an insult to their intelligence That false and artificial emphasis held by the injudicious as the mark of an expressive reader, which is sometimes cultivated in schools, should be strongly discouraged. In *The Light That Failed* Kipling makes a scathing mention of the reading of a "bright" boy from a board school

The most common faults of children in emphasising are:

(*a*) Sing-song

(*b*) Emphasising unimportant words such as prepositions, adverbs and conjunctions, at the expense of nouns, or verbs

(*c*) Emphasising a pronoun when the pronoun is unemphatic, or emphasising an adjective instead of a noun

Sing-song may be well illustrated by asking children to say the end of a multiplication table: thus "Seven elevens are seventy-seven. Seven twelves are eighty-four." Unfortunately they are inclined to transfer this type of emphasis to the recitation of poetry The writer has noticed this tendency even in boys of fifteen.

In verse there is what is called a metric stress In the following example the metric stress is marked·

"The plóughman hómeward plóds his wéary wáy
And leáves the wórld to dárkness ánd to mé."

It will be noticed that in the first line the metric stress almost coincides with the sense stress, but in the second line a metric stress falls on the unimportant word *and* Children, unless properly taught, will use the metric stress in preference to the sense stress

Now the beauty of spoken verse depends partly on the subtle interweaving of the

sense stress and the metric stress. The second line in the above example should of course be spoken.

"And leaves the world to darkness and to me" where a slight pause after the word *darkness* compensates for the leaving of *and* unstressed.

Consider the following example

1 "My gentle Puck, come hither: Thou
remembr'rest
2 That once I sat upon a promontory,
3 And heard a mermaid on a dolphin's back
4 Utter such dulcet and harmonious sounds
5 That the rude sea grew civil at her song,
6 And certain stars shot madly from their
spheres
7 To hear the sea-maid's music"

It will, of course, be understood that the mark in the above example means an ordinary stress, and the double mark means a slightly stronger stress.

The sense stress in the above example is marked In the first line the strong stress on *Puck* is given by slightly more force and a very short pause after the word. The metric stress in the second line coincides with the sense stress, except in the case of the word *upon*, which has metric stress, but must be hurried over, and the strong stress must fall on *promontory*. In line three a very slight pause after *mermaid* is necessary The strong stress on *back* illustrates the general rule that nouns should be stressed rather than adjectives, as the word *dolphin's* is used as an adjective. There should be no pause at the end of a line except where the sense or the punctuation warrants it In line four the sense stress falls on the first syllable of *utter*, whereas the metric stress falls on the second syllable. A case like this provides a pleasing variety in the verse. The word *sounds* should have a slightly stronger stress than the adjectives *dulcet* and *harmonious* There is a slight hiatus in line six, e g., *stars shot* In a case like this each word should be pronounced distinctly There would be a tendency in this line to over-emphasise *madly*. In the writer's opinion the strong emphasis should fall on *stars* and *spheres*.

The above passage also gives good practice in the management of the crescendo. It should begin *piano*, then *crescendo* with rising intonation, and should reach its height in line four, a slight *diminuendo* takes place in line five with falling intonation *crescendo* again takes place in line six, while in line seven we have *diminuendo*, with falling intonation.

The above passage also provides a good exercise for the management of the breath. There is a long pause in the first line. The only other possible places for taking breath are a short pause after *promontory*, and another short pause after *song*.

In order to secure proper control of the breath a good exercise is to give a short sentence to be said in one breath, then gradually increase the length of the sentence until a long sentence can be said with ease after taking only one breath.

The following exercises for children of nine plus have been framed to deal with each branch of the subject·

I. Breathing exercises.—The following are a few guiding principles.

1. Breathing exercises should take place if possible in the open air.
2. Both inhalation and exhalation should take place through the nose.
3. Exhalation should take longer than inhalation.
4. All strained positions should be avoided (i e. unnatural arching of the chest, drawing in of the abdomen).
5. Holding the breath should be discouraged

Exercise I.

1. Stand erect with body well balanced, feet slightly apart.
2. Place the hands on the lower part of the chest (This is done so that the child may feel the chest movement.)

3. Breathe out completely, letting all the muscles relax, at the same time lowering the head slightly forward, and pressing the lower ribs gently with the hands.
4. Breathe in through the nose, raising the head, counting, one, two, three.
5. Breathe out through the nose, counting one, two, three, four, relaxing as before.

Repeat the exercise about a dozen times After some days it will be possible to take deeper breaths, and the number counted may be increased. Breathing exercises should be given at least once every day.

Exercise II. Breathing combined with vowel sounding.

1. Repeat the above exercise, exhaling, then inhaling.
2. Breathe out, sounding the vowel *ah*
3. ,, ,, ,, ,, ,, *aw.*
4. ,, ,, ,, ,, ,, *oh*
5. ,, ,, ,, ,, ,, *oo.*
6. ,, ,, ,, ,, ,, *ay.*
7 ,, ,, ,, ,, ,, *ee*
8 ,, ,, ,, ,, diphthong *i* (*ah ee*).
9. ,, ,, ,, ,, ,, *oi* (*aw ee*)
10. ,, ,, ,, ,, ,, *ow* (*ah oo*).

ah as in *Pa*	*ay* as in *plate*
aw as in *paw*	*ee* as in *seem*
oh as in *boat*	*i* as in *crime*
oo as in *boot*	*oi* as in *boy*

ow as in *cow*

NOTE

1. A few of these (say three) should be taken each day.
2 The teacher should count three during inhalation and four during exhalation After considerable practice the vowel sound may be sustained longer.

Exercise III. Nasalisation.

1. Repeat Exercise II. but this time count one, two, on the vowel, then close the lips and bring the sound through the nose thus *ah—m.* Continue with other vowels.
2 Repeat exercise with vowels, this time substituting *n* for *m*
3. Repeat exercise with vowels, this time substituting *ng.*
4. Close the nasal orifice by pinching the nose with the fingers, and repeat Exercises I and II. This results in *ahb* and *ahd*, and shows the children that in order to pronounce the nasals it is necessary to have the nasal passage clear.

Exercise IV. Tone The object of this exercise is to detect and deal with breathy or throaty tone.

1. Let the tongue rest with the tip against the lower front teeth.
2. Sound *a* almost as in *cat*, making the sound as hard and short as possible Repeat several times.

   (This sound exhibits the hard quality of the voice and is opposed to the breathy quality Be particular to get the North Country sound of *a* rather than the Southern, which latter approximates to *e* as in *kettle*)
3 Sound *oh.* Repeat Where breathiness exists it shows itself in this sound The sound should begin immediately with the breath
4. Sound *m* softly See that the sound begins immediately. Numbers 3 and 4 should be sounded on a musical note, say *G.*
5. Repeat the vowel sound *a* with several consonants, e.g *ma, na, pa, ba, ta, da, sa, za, ka, ga.*
6. Repeat the vowel *oh* with consonants in the same manner, e g *oh, loh, boh, toh,* etc.

Exercise V. Vowels and consonants combined.

Vowels.	1	2	3	4	5	6	7	8	9
	ah	*aw*	*oh*	*oo*	*ay*	*ee*	*i*	*oi*	*ow*

1 (*a*) Sound *pah, paw, poh, poo, pay, pee, pi, poi, pow.*

(*b*) Then *ahp, awp, ohp, oop, ayp, eep, ip, oip, owp*

2 Sound the vowels with *b* in the same manner, e g.

(*a*) *bah, baw, boh,* etc

(*b*) *ahb, awb, ohb,* etc.

3. Use the remaining consonants similarly: *t, d, f, v, th* (as in *path*), *th* (as in *bathe*), *sh* (as in *shadow*), *zh* (as in *pleasure*), *s, z, k, g* (as in *gay*), *ch* (as in *church*), *j, l, m, n, r, ng.*

NOTE

1. The corners of the mouth should not be drawn back more than usual.
2. During the pronunciation of a vowel the tongue must rest so that the tip lightly touches the lower front teeth.

Exercise VI. Sustaining the breath

The longer examples should be given only after considerable practice in breath control Hurrying over the examples should not be allowed. Each word must be pronounced distinctly.

Say in one breath·

1 This is the house that Jack built
2. This is the malt that lay in the house that Jack built.
3. This is the rat that ate the malt that lay in the house that Jack built. (This may be continued)
4 Who killed Cock Robin?
5. "I," said the sparrow, "with my bow and arrow. I killed Cock Robin."
6. Old Mother Hubbard went to the cupboard
To get her poor dog a bone.
7. When she got there the cupboard was bare,
And so the poor dog had none
(Later 4 and 5, and 6 and 7 can be said in one breath)
8. Jack and Jill went up the hill
To fetch a pail of water,
9. Jack fell down and broke his crown
And Jill came tumbling after.
10 Simple Simon met a pieman going to the fair
11. Said Simple Simon to the pieman, "Let me taste your ware "
12 Three fishers went sailing out into the West,
Out into the West as the sun went down.
13 Their van will be upon us, before the bridge goes down;
14. And if they once may win the bridge, what hope to save the town?
15. All the little boys and girls,
With rosy cheeks and teeth like pearls,
16 Tripping and skipping ran merrily after
The wonderful music with shouting and laughter.

NOTE.—Several of these exercises are arranged so that they may be combined as the child gains more control over the breath.

II. Articulation.

Exercise VII.

The following sentences are to be spoken slowly and the right vowel quality is to be given to each syllable. The object is to avoid slovenly articulation. Thus *potato* is to be pronounced *pohtaytoh* not *pertayter*, *you* is to be pronounced *yoo* not *yer* Then each sentence can be spoken at the usual rate but carefully pronounced.

1 What do you mean by saying that our dog has hurt his poor paw?
2. Because he is not walking naturally (*Nat* not *nach*)
3 The potatoes are for you, not for us
4. This is the eighth great root of potatoes he has found. (Take care that *eighth* and *great* are pronounced distinctly)
5. One or two thousandths of these lengths is enough.
6. The acts of the guests angered the hosts
7. I saw a rose upon a thorn in the drawing-room.
8. In the churchyard cottage, I dwell near them with my mother.

9 To-night will be a stormy night,
You to the town must go, (not *mus* go)
And take a lantern, chil*d*, *t*o light
Your mother through the snow

10. They fough*t* *t*he dogs an*d* *k*ille*d* *t*he cats,
And bi*t* *t*he babies in the cradles,
And ate the cheeses out of the vats,
And licke*d* *t*he soup from the cook's own ladles,
Split open the kegs of salted sprats,
Made nes*ts* inside men'*s* *S*unday hats,
And even spoile*d* *t*he women's chats.

NOTE —In 9 and 10 the consonants must be pronounced distinctly.

Exercise VIII General exercise. Some of the following may be used for recreative purposes.

A. CONSONANTS.

1 An anemone, ma am, not an enemy.
2 Six sick sheep sink in the ship
3. Think these three things through thin and thick
4. Stupid Susan smashed shilling saucers.
5. Should such a shapely sash such shabby stitches show
6 The picture of the pitcher is richer than nature.
7. It isn't the hunting that hurts the horses' hoofs, it's the hammer, hammer on the hard high road
8. Full fathom five thy father lies.
9 Around the rugged rocks the ragged rascal ran.
10 On Tuesday the Jew said adieu

B. VOWEL QUALITY.

1. Poor Pa pours over the floor more water from the moor.
2. Of course this horse is hoarse
3. The *Daily Mail* is on sale in the dale.
4. I saw a ship a-sailing.
5. How can a cow browse on the down?
6. A mile from the isle is a stile.
7. Alone, alone, all all alone,
Alone on a wide wide sea.
8. Who hoots in the blue room? Do you?
9. And when the ground was white with snow
And I could run and slide,
My brother John was forced to go,
And he lies by her side.
10. Moor, moor the barge, ye gallant crew,
And, gentle lady, deign to stay.

NOTES

1. London children are inclined to pronounce *ay* (as in *plate*) almost as *i* (*ahee*). Even when this tendency is almost cured they are likely to relapse when *ay* comes before *l* as in 3 and 4
2. The vulgarism "I saw*r* a ship", and the placing of an *r* after the sound *aw* generally, must be eliminated
3 Note especially in West Country speakers the habit of sounding *ow* as if prefaced by the *e* in *the* thus: *eahoo* or even sounding it as *ayahoo* instead of *ahoo*.
4. There is a growing habit, especially in the South, of prefacing *ee* to the sound *oo*, thus· *heeoo heeoots* in the *bleeoo reeoom*, for *who hoots* in the *blue room*? This habit is most objectionable
5 London children have a tendency to substitute *awee* almost as in *boil* for *ahee* as in *white*.

Exercise IX Emphasis

A SING-SONG.

The teaching of nursery rhymes to young children, a laudable practice in many ways, is no doubt partly responsible for the fault called "sing-song."
Repeat the following with natural expression·

1. This is the house that Mr. Jones built.
This is the house that Jack built.
2. The old lady went to the cupboard to get her poor dog a bone
Old Mother Hubbard went to the cupboard to get her poor dog a bone.

3 Five fours are twenty and five fives are twenty-five
Five elevens are fifty-five and five twelves are sixty
4 What a good boy he was!
He put in his thumb and pulled out a plum
And said, "What a good boy am I!"
5. There came a great insect and frightened her away.
There came a great spider and sat down beside her,
And frightened Miss Muffet away

B VERSE.

6 The King sits in Dunfermline town,
Drinking the blood-red wine.
O where shall I find a skilful skipper
To sail this new ship of mine?
7 John Gilpin was a citizen
Of credit and renown;
A train-band captain eke was he
Of famous London town.
8 Down dropt the breeze, the sails dropt down,
'Twas sad as sad could be,
And we did speak, only to break
The silence of the sea
9 I met a little cottage girl,
She was eight years old, she said,
Her hair was thick with many a curl
That clustered round her head.
10 Oh, listen, listen, ladies gay!
No haughty feat of arms I tell
Soft is the note and sad the lay
That mourns the lovely Rosabelle

C. DIALOGUE

In the forest.

Wolf. Good morning, little Redcap!

Redcap Good morning, Mr. Wolf!

Wolf Where are you going so early?

Redcap. To my grandmother's

Wolf. And what are you carrying in your basket?

Redcap Some wine and meat We baked the meat yesterday so that grandmother might have a nice meal.

Wolf And where does your grandmother live?

Redcap. Oh, quite twenty minutes' walk farther in the forest Her cottage stands beneath three great oak trees, and close by are some nut bushes, by which you will at once know it

Wolf (*aside*) She is a nice, tender little thing, and will taste better than the old woman; I must act cleverly and make a meal of both (*To Redcap*) Look at the pretty flowers all around you. Don't you hear how sweetly the birds are singing? Your grandmother will be pleased if you take her some pretty flowers.

The Cottage.

Redcap How sad I feel! I wish I had not come to-day Good morning, grandma!

Wolf. Good morning, my dear!

Redcap. Oh, grandmother, what great ears you have!

Wolf. All the better to hear you with.

Redcap. And what great eyes you have!

Wolf All the better to see you with

Redcap. And what great hands you have!

Wolf. All the better to touch you with

Redcap. And what very great teeth you have!

Wolf. All the better to eat you with.

(Adapted from *Grimm's Fairy Tales.*)

The importance of oral work.—The report of the Ministry of Education on the primary school states that the aim of English teaching between the ages of 7 and 11 is the "formation of correct habits of speaking and writing" It further states that "oral expression will have a greater importance than exercises in written English."

Later on the same point is emphasised. "Good habits of speech and writing are to be formed, and of these two, those of speech are to be regarded as the more important" Another quotation from the same report

will serve to illustrate the immense importance attached to oral work

"We wish the cultivation of speech in the primary school to go beyond the art of correct and lucid expression Children should learn to dislike coarse vocalisation, and slovenly articulation, and to feel something of the dignity which is added to life when men use with care and respect the beautiful instrument of discourse which they have inherited from their forefathers."

The teacher's problem.—The teacher's problem stated generally is· How can the standard of spoken English be improved throughout any ordinary school? First it must be remembered that children learn a great deal by conscious or unconscious imitation, and it has been stated that every teacher, no matter what his special subject may be, is a teacher of English Then it follows that each teacher must insist, as far as he is able, on clear and accurate speech.

If possible, in each school there should be one specialist trained in elocution who could undertake the general responsibility for the improvement of speech His work would be comparable to that of heads of departments in a secondary or technical school He could plan out the work of his colleagues and act in an advisory capacity, thus co-ordinating their efforts for the purpose of securing the desired result. It would be necessary to grade each pupil in the school on the results of a reading and speaking test suited to his age and development. The grade of each child should be kept on a card, on which mention would also be made of any individual peculiarities which needed special treatment. At least one lesson every week should be devoted to spoken English, and in addition, as stated before, no teacher should tolerate slovenly expression The grading test throughout the school could be given twice or three times a year, and improvements of grade noted on the cards. Those who pass into the *A* grade could be given as a reward dramatic training, and could be excused the general speech lesson. In judging the reading or recitation the following elements should be borne in mind.

(*a*) Tone (pure as opposed to breathy, throaty or nasal)
(*b*) Vocal quality (approximation to standard English)
(*c*) Clearness in articulation.
(*d*) Right use of emphasis.

It will be noticed that (*a*), (*b*) and (*c*) are the result of the right use of the machinery of voice production On the other hand (*d*) depends on an intelligent grasp of the subject matter and a sympathy with the author

Above all, it is necessary to cultivate as far as possible a love for poetry and a sense of rhythm, not by injudicious manifestation of enthusiasm on the part of the teacher, but by providing examples of poetry suitable to the age and capacity of the children Beginning with the nursery and the nonsense rhyme, where the sense is subordinate to the rhythm and the rhyme, proceeding through the ballad and action poetry, to the poetic drama and the study of Shakespeare, the pupil in the adolescent stage may begin the study of lyrical poetry.

Through all the stages the use of dialogue is advised, and the preparation and acting of simple plays by the pupils themselves, as this practice besides cultivating natural emphasis, gives life and interest to the whole study.

Books to consult.—Those who wish to pursue this subject further are advised to consult *The Speaking of English Verse* by Elsie Fogerty. This book treats the whole subject in a masterly way and the writer has found it invaluable as a guide to his own practice

For the phonetics of English the following books are recommended

The Pronunciation of English, by D. Jones.

The Sounds of Spoken English, by W. Ripman

For the cultivation of appreciation of verse. *The Rudiments of Criticism*, by E. Greening Lamborne

TWO LITTLE PLAYS

1. GORGO AND PRAXINOË

"When is it to-morrow?" asked a little boy whose father had promised him a rare treat for the next day Half an hour later he came again with the query, "Is it to-morrow yet?" "You must be patient," replied his father. "Time will soon pass"

Children are not the only people who are puzzled and fascinated by the thought of Time Many poets have tried to describe it, thinking of it chiefly as a person One calls Time a thief, since he appears silently and disappears swiftly, stealing away our life before we are aware of the theft, another sees in Time an old man, with venerable white locks, creeping slowly towards the grave; a third calls Time a hag whose hair hangs over her face, and whose head at the back is bald, so that if a man once fails to "seize Time by the forelock" he can never catch her when she has passed.

We, too, playing with fancy, can invent our own pictures. Sometimes Time seems an endless rope unwound from a gigantic coil. Or, as we try to look back into the past, Time seems the longest street in the world, and we stand at one end of it peering at minute objects in the far distance.

Books are the instruments which bring the past near to us, just as a telescope seems to bring the stars near to the earth, or we may say that books come like sunshine to clear away the fog which Time has flung over the past.

And when the misty veil is lifted, what surprises we get! Here is a little story written nearly two thousand two hundred years ago, and yet it might have been written yesterday Its writer, a Greek called Theocritus (pronounced The-ok'-rit-us) wrote it as a poem which he called an idyll (id'-il) It describes the adventures of two Greek ladies living in Alexandria in North Africa. One of them, Gorgo, comes to visit her friend, Praxinoe. The city is filled with excited crowds all making their way to the temple where a great religious festival is being held in honour of Adonis, who was worshipped by the Greeks as a god A statue of Adonis, robed with costly draperies embroidered with gold, is lying in state in the temple, where the priestesses sing solemn hymns in honour of the god The two Greek ladies decide to visit the temple to see the gorgeous ceremony What happened to them let the story tell for itself.

People mentioned in the Play

GORGO (Gor'-go), a friend of Praxinoë

PRAXINOE (Prax-in'-o-ë), a lady of Alexandria.

ZOPYRION (Zop-i-ri-on), the little son of Praxinoë

DIOCLEIDES (Dy-o-kly'-deez), the husband of Gorgo

EUNOE (you-no'-ee), PHRYGIA (frid'gia), EUTYCHIS (you'-ti-keez) — Slaves who serve Praxinoë

ATHENE (Ath-ee'-nee), PERSEPHONE (Per-sef'-o-nee) — Two Greek goddesses

PTOLEMY (tol'e-mi), the Greek ruler of Alexandria

ADONIS (Ad-o'-nis), a legendary Greek hero worshipped as a god

The Idyll

Gorgo Is Praxinoe at home?

Praxinoe Dear Gorgo, how long it is since you have been here! She *is* at home. The wonder is you have got here at last! Eunoe, see that she has a chair Throw a cushion on it too

Gorgo. It does most charmingly as it is.

Praxinoe Do sit down

Gorgo. Oh, what a thing spirit is! I have scarcely got to you alive, Praxinoe! What a huge crowd, what hosts of four-in-

hands![1] Everywhere cavalry boots, everywhere men in uniform! And the road is endless yes, you really live *too* far away!

Praxinoe It is all the fault of that madman[2] of mine. Here he came to the ends of the earth and took—a *hole*, not a house, and all that we might not be neighbours. The jealous wretch, always the same, ever for spite!

Gorgo. Don't talk of your husband, Dinon, like that, my dear girl, before the little boy,—look how he is staring at you! Never mind, Zopyrion, sweet child, she is not speaking about papa.

Praxinoe Our Lady! The child takes notice.

Gorgo. Nice papa!

Praxinoë. That papa of his the other day—we call every day "the other day"—went to get soap and rouge at the shop, and back he came to me with salt—the great big endless fellow!

Gorgo. Mine has the same trick, too, a perfect spendthrift—Diocleides! Yesterday he got what he meant for five fleeces,[3] and paid seven shillings a piece for—what do you suppose?—doe skins, shreds of old leather wallets, mere trash—trouble on trouble. But come, take your cloak and shawl. Let us be off to the palace of rich Ptolemy, the king, to see the Adonis, I hear the queen has provided something splendid!

Praxinoe. Fine folks do everything finely.

Gorgo What a tale you will have to tell about the things you have seen, to anyone who has not seen them! It seems nearly time to go.

Praxinoe. Idlers have always holiday Eunoe, bring the water and put it down in the middle of the room, lazy creature that you are Cats like always to sleep soft! Come, bustle, bring the water; quicker. I want water first, and how she carries it! Give it me all the same; don't pour out so much, you extravagant thing Stupid girl! Why are you wetting my dress? There, stop, I have washed my hands, as heaven would have it. Where is the key of the big chest? Bring it here.

Gorgo. Praxinoe, that full body becomes you wonderfully. Tell me how much did the stuff cost you just off the loom?

Praxinoë Don't speak of it, Gorgo! More than eight pounds in good silver money,—and the work on it! I nearly slaved my soul out over it!

Gorgo. Well, it is *most* successful; all you could wish.

Praxinoe Thanks for the pretty speech! Bring my shawl, and set my hat on my head, the fashionable way No, child, I don't mean to take you Boo! Bogies! There's a horse that bites! Cry as much as you please, but I cannot have you lamed. Let us be moving Phrygia, take the child, and keep him amused, call in the dog, and shut the street door.

[*They go into the street*]

Ye gods, what a crowd! How on earth are we ever to get through this coil? They are like ants that no one can measure or number. Many a good deed have you done, Ptolemy; since your father joined the immortals, there's never a malefactor to spoil the passer-by, creeping on him in Egyptian fashion—oh! the tricks those perfect rascals used to play Birds of a feather, ill jesters, scoundrels all! Dear Gorgo, what will become of us? Here come the king's war horses! My dear man, don't trample on me Look, the bay's rearing, see, what temper! Eunoë, you foolhardy girl, will you never keep out of the way? The beast will kill the man that's leading him What a good thing it is for me that my brat stays safe at home

Gorgo. Courage, Praxinoe. We are safe behind them, now, and they have gone to their station

Praxinoe There! I begin to be myself again Ever since I was a child I have feared nothing so much as horses and the

[1] Four-in-hands—four-horsed chariots

[2] The "madman" is Praxinoe's not-too-polite name for her husband

[3] "He got what he meant for five fleeces"—He sold five sheepskins and got full price for them

chilly snake. Come along, the huge mob is overflowing us

Gorgo (*to an old Woman*). Are you from the Court, mother?

Old Woman I am, my child.

Praxinoe Is it easy to get there?

Old Woman The Achæans got into Troy by trying, my prettiest of ladies. Trying will do everything in the long run

Gorgo The old wife has spoken her oracles, and off she goes.

Praxinoe Women know everything, yes, and how Zeus married Hera!

Gorgo. See, Praxinoe, what a crowd there is about the doors.

Praxinoe. Monstrous, Gorgo! Give me your hand, and you, Eunoe, catch hold of Eutychis; never lose hold of her, for fear lest you get lost. Let us all go in together, Eunoë, clutch tight to me Oh, how tiresome, Gorgo, my muslin veil is torn in two already! For heaven's sake, sir, if you ever wish to be fortunate, take care of my shawl!

Stranger. I can hardly help myself, but for all that I will be as careful as I can.

Praxinoe. How close-packed the mob is, they hustle like a herd of swine

Stranger Courage, lady, all is well with us, now.

Praxinoe. Both this year and for ever may all be well with you, my dear sir, for your care of us A good, kind man! We're letting Eunoe get squeezed—come, wretched girl, push your way through That is the way. "We are all on the right side of the door," quoth the bridegroom, when he had shut himself in with his bride

Gorgo. Do come here, Praxinoe Look first at these embroideries How light and how lovely! You will call them the garments of the gods.

Praxinoe. Lady Athene[1], what spinning women wrought them, what painters designed these drawings, so true they are! How naturally they stand and move, like living creatures, not patterns woven What a clever thing is man! Ah, and himself—Adonis—how beautiful to behold as he lies on his silver couch, with the first down on his cheeks, the thrice-beloved Adonis—Adonis beloved even among the dead.

A Stranger. You weariful women, do cease your endless cooing talk! They bore one to death with their eternal broad vowels!

Gorgo Indeed! And where may this person come from? What is it to you if we *are* chatterboxes! Give orders to your own servants, sir. Do you pretend to command ladies of Syracuse? If you must know, we are Corinthians by descent, like Bellerophon[1] himself, and we speak Peloponnesian[2] Dorian women may lawfully speak Doric,[3] I presume?

Praxinoe. Lady Persephone, never may we have more than one master. I am not afraid of *your* putting me on short commons.

Gorgo Hush, hush, Praxinoe—the Argive woman's daughter, the great singer, is beginning the *Adonis*; she that won the prize last year for dirge-singing. I am sure she will give us something lovely, see, she is preluding with her airs and graces.

The Psalm of Adonis

[*Sung by the Priestess*]

Before him lie all rich fruits that the tall trees' branches bear, and the delicate gardens, arrayed in baskets of silver, and the golden vessels are full of incense of Syria. And all the dainty cakes that women fashion in the kneading-tray, mingling blossoms manifold with the white wheaten flour, all that is wrought of honey sweet, and in soft olive oil, all cakes fashioned in the semblance of things that fly, and of things that creep, lo, here they are set before him

[1] Athene—the goddess of wisdom and of power Praxinoe is gazing upon the pictures, tapestries, and embroideries that adorn the temple.

[1] Bellerophon (Bel-lér-o-fon)—the Greek hero who rode the winged horse Pegasus, and killed the monster called the Chimaera

[2] Peloponnesian—the language spoken in the peninsular part of Greece

[3] Doric—the language of a Greek tribe

Here are built for him shadowy bowers of green, all laden with tender anise[1], and children flit overhead—the little Loves—as the young nightingales perched upon the trees fly forth and try their wings from bough to bough.

. . . . .

Be gracious now, dear Adonis, and propitious even in the coming year. Dear to us has thine advent been, Adonis, and dear shall it be when thou comest again.

. . . . .

Gorgo. Praxinoe, the woman is cleverer than we fancied! Happy woman to know so much, thrice happy to have so sweet a voice Well, all the same, it is time to be making for home. Diocleides has not had his dinner, and the man is all vinegar,—don't venture near him when he is kept waiting for dinner. Farewell, beloved Adonis, may you find us glad at your next coming.

2. BELL THE CAT

A very Simple Play for the Junior Classes.

People in the Play—DOCTOR RAT NURSE RATTA PORTER MRS RATBERRY MAYOR RAT POLICE INSPECTOR RAT. RATS 1, 2, 3, 4, 5, 6, 7.

Scene I—The Rats' Hospital

[*Doctor Rat and Nurse Ratta are discovered bandaging Rat* 1. *Several rats sitting round bandaged A table on the right with a telephone A couch in the centre*]

Doctor. I think he will do now. Put him to bed and give him some warm milk. He's suffering from cat shock more than from the wound. It's his own fault. He should look about him before coming out of a hole to cross a room.

[*Enter Porter*]

Porter Your lunch is ready, Doctor.

Doctor Very well, I'll be there directly.

[*Enter two Rats supporting Rat* 2]

[1] Anise—a plant with sweet-smelling seeds

Nurse Ratta Another case, Doctor!

Doctor. Oh, bother!

[*Patient is placed on the couch*]

Let's see what is the matter with him.

Doctor (*continues*). Three parallel scratches from the head to the tail My friend, he nearly had you that time. A square patch of fur missing. Very interesting case! Let's see if any bones are broken.

[*Prods the patient Patient squeals*]

Nurse. Is it a case for operation, Doctor?

Doctor I'm afraid so We must stick a little fur on the bare patch. Bring the chloroform and the seccotine.

[*The doctor goes through the operation. Noise outside*]

Mrs Ratberry (*outside*) I *will* come in A long-nosed Porter like you won't stop me. I've lost my husband I want to see the doctor, and I'm going to see him.

Doctor (*calls out*). What is all that noise about, Porter?

[*Enter Porter L*]

Porter If you please, Doctor, there's a middle-aged female at the door; says she's lost her husband, and thinks we've got him here. When I told her she couldn't come in she made a remark about my nose, and said she'd break the door down

[*Violent knocking*]

Mrs. Ratberry. I want my husband.

Doctor. Dear me! What a violent woman! I'm afraid she'll disturb the patients. Let her in, Porter, and I'll have a talk with her.

[*Exit Porter L. Doctor sits by table R. Enter Mrs Ratberry violently, pushing Porter aside*]

Mrs Ratberry. Which is the doctor?

Doctor. Calm yourself, my good woman Take a seat. Now tell me what you want and be quick about it, as we are very busy here this morning.

Mrs Ratberry. Well, sir, my husband went to work yesterday evening and that's the last I have seen of him I had a lovely

dinner ready for him, toasted cheese, a beautiful piece of fat——

Doctor. Yes, yes, but go on with the story. Never mind his dinner It makes me think of mine.

Mrs Ratberry. Well, there was the dinner going cold and no one to eat it I sat up all day I was very anxious as his work was very dangerous.

Doctor. What was his work?

Mrs. Ratberry He was a food importer. Every evening he went through Rathole into Catville and brought back all sorts of provisions

Doctor Did he ever tell you that he'd seen the cat?

Mrs Ratberry. Yes, Doctor; he had one or two frights last week He said he'd have to give up his work before long, as he was getting too old, and he was not so quick as he used to be

Doctor Dear me! This looks bad What is your name?

Mrs Ratberry Mrs Ratberry

Doctor. Nurse, is there anyone of the name of Ratberry in the hospital?

Nurse (*looks through list*). No, Doctor.

Doctor Perhaps the police rats will know something about him. I'll 'phone through (*Takes telephone*) Are you there? Hello! Hello! Dr Rat speaking. Give me Ratville 1438, please Thank you, miss Is that you, Inspector? Dr Rat, of Rat Hospital, speaking Good morning! Busy times! Yes, very! Several accident cases this morning! What's that? What's to be done? I don't know We'll have to put a stop to it somehow. The Mayor has called a meeting here to-day about it Will you come? That's right.

Oh, what I wanted to ask you was this. Have you any information about a Mr. Ratberry, food importer, missing since yesterday morning? Yes, I'll hold on. Good gracious! That's very dreadful. Thank you very much, Inspector. Good-bye! (*Rings off*)

Mrs Ratberry Has he found out anything, Doctor?

Doctor Yes, my poor woman You must be brave I have very sad news for you.

Mrs Ratberry Is he badly hurt?

Doctor Worse than that.

Mrs Ratberry He's dead. Oh dear! Oh dear! Why didn't he retire before?

Nurse Was it the cat again, Doctor?

Doctor. Yes, it was that huge, cruel beast that caught him and killed him while he was nobly doing his duty, bringing in food for the rat-people. Two brave police-rats went out and brought in his body.

Mrs Ratberry. Oh, the cruel, ugly beast! I shall go and fight him myself

[*Goes towards the door*]

Doctor. The poor woman does not know what she is doing. Stop her!

[*Patients and nurses prevent her from going out. She is brought back*]

Doctor (*patting her on the back*). There, there! Never mind! He died doing his duty, and you shall have a widow's pension and free cheese for the rest of your life Take her away, Nurse, and do what you can to comfort her.

[*Exit Nurse R with Mrs Ratberry*]

This murder business is enough to drive one mad.

Rat 1 (*sings*) "I love little pussy, her coat is so warm."

Doctor. Who's that?

Rats. It was Rat One, Doctor!

Doctor. Fancy singing the cats' national anthem in Ratville.

Rats. Throw him out! Send for the police.

Doctor. Silence, all of you! Now, Rat One, what have you to say? If you want to sing, sing the Rational Anthem, not the Cational Anthem.

Rat 1 (*sings*). "I love little pussy, etc."

[*Re-enter Nurse*]

Doctor. Quite mad! Porter, put him in the padded room The last fight has been too much for him He's suffering from cat-shock.

[*Rat* 1 *is led out struggling and singing*]

Nurse. Doctor, you'd better go and have your lunch now, while you have a chance

[*Enter two rats supporting another rat*]

Porter (*re-entering*). Another serious case, Doctor!

Doctor Porter!

Porter. Yes, sir

Doctor Take me to the padded room!

Porter Oh no, sir. You may be mad, but you're quite harmless.

Doctor I'm not so sure that a doctor is quite harmless.

Curtain.

Scene II—A room arranged for a meeting, table in centre

[*Rat* 3 *and Rat* 4 *arranging chairs and forms, etc*]

Rat 3 Isn't it about time to open the doors and let in the public?

Rat 4. Oh, don't be in a hurry, let them wait a bit.

Rat 3. This is a dreadful business Did you see this morning's paper?

Rat 4. No, I was too busy What did it say?

Rat 3 (*producing newspaper*). Read it for yourself.

Rat 4. What's this. The *Daily Tail.* I usually get the *Telegrat*. (*Reading*) "Hospitals full" "Many dead." "What is the government doing?" "Down with the cats!" "People demand justice." This looks bad.

Rat 3. It is bad. Look here! "Widow's complaint" "Hero's death." Poor old Ratberry! So the cat got him at last. I knew him well. Although he was brown he was a white rat through and through There was no better rat in Ratville

Rat 4. It seems that we shall have a lively meeting The rat people are angry, and they will blame it all on the government.

[*Noise outside*]

I think we had better let them in

[*Rats open door Rats crowd in and seat themselves on the benches talking excitedly*]

Rat 3 Silence, lady rats and gentlemen rats, for the Mayor Rat

[*Enter Mayor with attendants and takes seat at table*]

Mayor Ladies and gentlemen!

A Rat. Hear! Hear!

Rats. Throw him out! Give him to the cat.

[*A police rat takes the interrupter out*]

Mayor. Ladies and gentlemen, I shall not take much of your time We are met this evening to find out what to do in these dreadful times As you know, many of our people have been killed, and our hospital is full of injured rats Every day more are killed and more are injured We cannot let it go on like this.

Rats. Hear! Hear!

Mayor. No, we must rise in our strength and stop it.

Rats. Hear! Hear!

Mayor. It is as dangerous to live in Ratville as to cross a road in London

Rats. Hear! Hear!

Mayor. The question is: What are we to do? Our homes are in danger! Our families are in danger! Our lives are in danger!

A Rat. Hear! Hear!

Rats Throw him out.

[*Police rat takes the interrupter out*]

Mayor I want to hear your opinions How can we get rid of this terrible cat, and live once more in peace and freedom? Has anyone anything to say?

[*Mayor sits down amid loud applause*]

Rat 4 Mr. Mayor, what do we keep a police force for? Why not send our police rats and arrest him?

Rats. Hear! Hear!

Mayor Perhaps the Inspector of police will be good enough to explain

Inspector First of all I must tell you that to arrest the cat would be very dan-

gerous, and would require very many police.

Rats What do we pay you for? He's afraid.

Mayor (*knocking on table*). Order! Order!

Inspector Secondly, if we did arrest him, how are we to get him through Rathole into Ratville? We keep Rathole small so that he can't get in.

Rat 4. Don't try and bring him in. Kill him outside.

Inspector. If the gentleman will come with the police and show them how to do it, they will try.

Rats Hear! Hear! Well done, Inspector.

Mayor. Now, Mr Rat Four, what do you say to that?

Rat 4 If I were not a married man, your worship——

Rats. Rubbish! He's afraid Throw him out!

[*Rat* 4 *is thrown out*]

Mayor. Any more proposals?

Rat 5 Your worship. I've always been against force I think we ought to try kindness.

Rats. Kindness! What rubbish! Throw him out.

Mayor Order! Order! Explain what you mean.

Rat 5. Well, sir! You know how fond he is of music. I have heard him singing at night. My idea is to soften his fierce heart with music

Mayor. To soften his heart with music? Well?

Rat 5. You know, sir, that music has great power. It once caused a great disaster in our history at a town called Hamelin, when many of our ancestors were drowned This time it will do us good. What says the poet? "Music hath charms to soothe the savage cat"

Mayor. That's worth thinking about

Rat 5. And then again Shakesprat, our greatest poet, speaks about the power of music.

Mayor Oh, yes, I know—Shakesprat He wrote "If You Like It," "Midsummer Night's Cream," "Ham Fat," etc.

Rat 5 Yes, and Shakesprat says that Ratpheus the great harper—

"with his lute made trees,
And the turnip tops and cheese,
Bow themselves when he did sing."

Mayor I don't think that Shakesprat was a strictly truthful rat. But what is your plan?

Rat 5. Find a good singer, let him go to the cat, and sing the "Cats' National Anthem", to show him that we want him to be our friend.

Mayor What is the "Cational Anthem"?

Rat 5 I'll sing it to you. (*Sings*)

"I love little pussy, her coat is so warm,
And if I don't hurt her, she'll do me no harm"

[*Uproar.*]

Rats. Traitor! Villain! Scoundrel! Give him to the cat!

Mayor Order! Order! Rat five we shall try your plan. You shall go into Catville and try your music on the cat.

Rats. Hear! Hear!

Rat 5 (*speaking in a husky voice*). I'm sorry, your worship, I should like to do it, but I've just lost my voice. You must send someone else.

Rats. Throw him out! [*Rat* 5 *is thrown out*]

Mayor. Dear me! It seems that we are wasting a lot of time. Any more proposals?

Rat 6 Your worship, I have an idea.

Mayor Well, I hope it's something sensible this time Speak up.

Rat 6 Your worship, I think that the real reason why the cat is so dangerous is because he walks so quietly that we can't hear him coming. My idea is to buy a bell, put it on his collar and hang it round his neck, so that when he walks we shall hear the bell, and we can run away.

Rats Hear! Hear! Splendid idea!

Mayor. That's the most sensible thing I've heard at this meeting I propose that Rat Six for his wonderful discovery, shall

be made a Fellow of the Rat Society, and be permitted to use the letters F.R.S. after his name

Rats. Hear! Hear!

[*Enter Doctor*]

Mayor. Welcome, Doctor. You've just come at the right time

Doctor. Thank you, Mr Mayor. I've just run over from the hospital to see if you've been able to find a way to deal with the cat

Mayor. I am delighted to say, Doctor, that we've found the very thing We are going to have a bell put round the cat's neck and then we shall hear him coming.

Doctor. And who is the brave rat who is going to put the bell round the cat's neck?

Mayor That is certainly a difficulty. Mr Rat Six, what have you to say about that? Will you do it?

Rat 6 Oh no, Mr. Mayor, I think the Inspector of Police should do that.

Inspector Nonsense, Mr. Mayor. I'm a policeman not a bell hanger

Mayor. Well, who is going to do it? Would you like to do it, Doctor?

Doctor. Good gracious, no! It has nothing to do with hospital work.

Mayor. I put it to the meeting. Who should do it?

Rats. You, Mr. Mayor, you.

Mayor Nonsense! I'm too old I think you all ought to do it together.

Rats. Hear! Hear! Let's do it altogether.

[*They sing and wave handkerchiefs*]

SONG

Steadily, shoulder to shoulder;
Steadily, and not a rat afraid,
We'll bell the cat, sings each brave rat,
The Rats of the Old Brigade

Mayor (*greatly moved*). Brave rats of Ratville! I have never been so stirred since I was at the meeting of the mice, where they sang the "Moussellaise"

Your song is even more stirring than that sad song of the Lobsters—the "Mayonnaise"

Rat 3 Three cheers for the Mayor. Hip, Hip—

Rats. Hooray!

Mayor. Forward, brave rats! Death or Victory!

Rats. Death or Victory.

[*A loud meow is heard*]

Rats The cat! The cat!

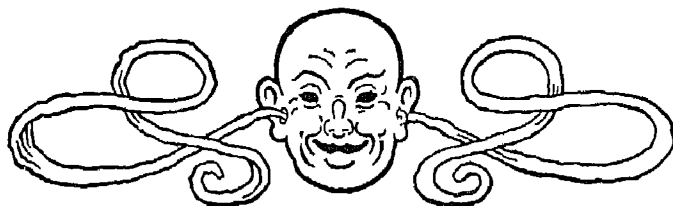
[*Stampede and exeunt in confusion*]
[*Enter Rat* 5.]

Rat 5. Bell the cat! Look at them! It's easy to talk but hard to do. I don't believe in force; I believe in kind methods (*Sings*). "I love little pussy, etc"

[*Loud meow heard outside*]

Rat 5 I believe it is the cat after all.

[*Exit hurriedly*]
Curtain



GENERAL KNOWLEDGE



[Camera portrait by Dorothy Wilding

THEIR MAJESTIES THE KING AND QUEEN

GENERAL KNOWLEDGE

THIS section of the Encyclopaedia contains brief accounts of a number of various subjects which will form a useful background of information for many "talks" with the children The various matters dealt with are listed in the Contents at the beginning of this Volume. Together with the information provided in the section *Notable People and Notable Days* the teacher will have ready to hand a considerable body of matter for reference in connection with such subjects as are dealt with from time to time in most primary schools

ROYALTY

King George VI.—The word "king" is the term used for a ruler. It means son of the tribe or kin, and is of Teutonic origin It is the English translation of the Greek "anax" and the Latin "rex", but is used for many different kinds of rulers Primitive peoples chose their king for his physical powers, as in the case of Saul, the first king of Israel, who was taller than any of his people. Thus at first kings were elected by the people, but later kingship became hereditary, as it is in Britain to-day.

George VI, king of England, was born at York Cottage, Sandringham, on December 14, 1895, and was named Albert Frederick Arthur George. He is the second son of the late King George V. and Queen Mary, and succeeded to the throne in December, 1936.

As a boy, the king was known as Prince Albert He was educated at the Royal Naval College, Osborne, and at Dartmouth, and in 1919 he entered Trinity College, Cambridge, where he studied history and economics In September, 1913, he joined H.M S. *Collingwood* as midshipman and was serving thus when the World War I began After undergoing an operation for appendicitis he was invalided out of the navy, which debarred him from active service during the early years of the war Later, he served with the Grand Fleet, and was present at the battle of Jutland, 1916 In November, 1917, he joined the naval branch of the Royal Air Force and finally served as wing-commander. In this way he obtained a knowledge of administration and gained experience as a pilot

In 1920 Prince Albert was created duke of York, and three years later he married Lady Elizabeth Bowes-Lyon, youngest daughter of the earl of Strathmore and Kinghorne They have two daughters, H R H Princess Elizabeth and H R H Princess Margaret Rose Together the duke and duchess made several tours in the Empire. In 1925 they went to British East Africa, visiting Kenya Colony and Uganda. Two years later they consented to open the new Australian houses of parliament at Canberra The journey started from Southampton, and on their way the duke and duchess visited Jamaica, passed through the Panama Canal to the Marquesas Isles, and after calling at Suva, in Fiji, arrived at Auckland, New Zealand Together they made a tour of the North Island, but the duke visited the South Island alone as the duchess's health for a time gave way under the strain After leaving New Zealand, they both visited New South Wales, Queensland and Tasmania After going to Melbourne and Adelaide, they came at length to Canberra for the climax of the tour. On the homeward journey a brief call was made at Fremantle in Western Australia, which completed the tour of the Antipodes

The duke was proclaimed king on December 12, 1936, on the abdication of his elder brother Edward He was crowned with his consort, Queen Elizabeth, at Westminster Abbey on May 12, 1937. Representatives from the Empire and all the world over

attended the ceremony, and the day was celebrated as a public holiday throughout the country

Since acceding to the throne the king has kept in close touch with the people of the Empire and their allies. Visits to France and to Canada were followed during the Second World War by tours to Africa, Italy, France and the Netherlands During the war the deep interest he has in the welfare of all was shown particularly when, despite dangers from aerial attacks, he and the queen were unceasing in their efforts to encourage or to console

Among crowded engagements were visits to factories, shipyards, underground shelters, canteens, hospitals and stricken cities in all parts of the country As Admiral of the Fleet, Field-marshal in the Army and Marshal of the Royal Air Force the king's appearances among our Empire's fighting men were scenes of great enthusiasm and he personally decorated 32,000 for their gallant services. On special occasions he broadcast, deeply impressing the whole world with the sincerity of his clear moving words.

The throne is hereditary in the British House of Windsor with mixed succession, the sons of the sovereign and their descendants having precedence of daughters, but daughters and their descendants preference over lateral lines

Queen Elizabeth, the first Scottish queen of England for eight hundred years, is the consort of King George VI. She is the youngest daughter of the earl and countess of Strathmore and Kinghorne, and was born at St Paul's Waldenbury, in Hertfordshire, on August 4, 1900 As Lady Elizabeth Bowes-Lyon, she spent a happy childhood, leading a normal family life with her nine brothers and sisters They lived in England for the greater part of the year, but for the summer months the family moved to the castle of Glamis, the ancestral Scottish home of the earl of Strathmore Parts of the castle are said to date from 1033 Many legends are attached to the castle, where events of historical interest have taken place

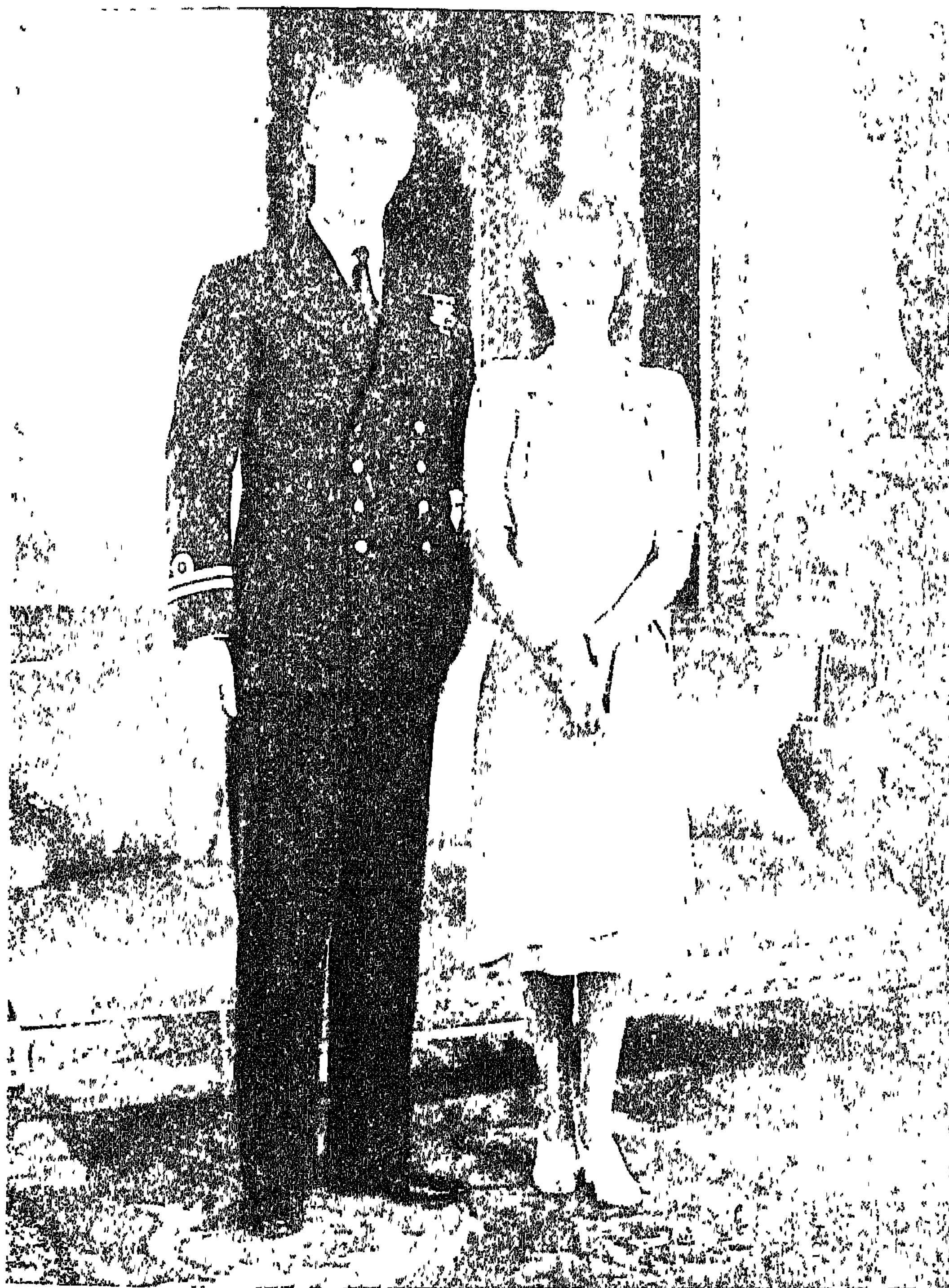
When Lady Elizabeth was fourteen years old, the World War I broke out. Her father and mother turned Glamis into a hospital, and the future queen of England spent her time in entertaining the wounded soldiers during their convalescence In January, 1923, she became engaged to Albert, duke of York, the second son of the late King George V. On April 26 of the same year the marriage took place at Westminster Abbey. Three years later Princess Elizabeth was born in London, and on August 21, 1930, Princess Margaret Rose was born at Glamis Castle, the first Royal baby to be born over the Scottish border since the birth of Charles I in 1600.

As duchess of York, the queen has accompanied her husband on his journeys in the Empire and elsewhere, and with her charm and unaffected manner she has endeared herself to the people The concern that she has for their welfare is shown by her active interest in housing and mothercraft. She is President of the Council of Girls' Clubs and Patroness of the Toc H League of Women Helpers. Needlework is another of her interests, she is also a good dancer and shares with the king his interest in lawn tennis

The queen is Lady of the *Garter* and Dame Grand Cross of the *Order of the British Empire*, Colonel-in-chief of the King's Own Yorkshire Light Infantry and Honorary Colonel of several regiments.

Princess Elizabeth is the heir-presumptive to the throne of England. She is the elder daughter of King George VI. and Queen Elizabeth, and was born on April 21, 1926, at No. 17, Bruton Street, the London house of her grandfather, the earl of Strathmore She was christened Elizabeth Alexandra Mary—Elizabeth after her mother, Alexandra after her great grandmother, Queen Alexandra; and Mary after her grandmother, Queen Mary.

Princess Elizabeth was carefully brought up to fill the high position which will one day be hers The study of languages



[Graphic Photo Union

H R H Princess Elizabeth and the Duke of Edinburgh

was an important part of her education. She has an excellent memory and an arresting personality. During the Second World War she was not content until she had followed up her training as a Girl Guide and Sea Ranger by service with the A.T.S as a second subaltern. She performs her public duties with the customary charm of her Royal parents. On November 20, 1947, the princess was married to the duke of Edinburgh, formerly Lieutenant Philip Mountbatten, R N.

King Edward VIII., now duke of Windsor, is the eldest son of the late King George V. and Queen Mary He was born at the White Lodge, Richmond, on June 23, 1894, and was christened Edward Albert Christian George Andrew Patrick David Thus he bears the names of the patron saints of the four countries of the United Kingdom, namely, St George for England; St. Andrew for Scotland; St Patrick for Ireland, and St. David for Wales

On his sixteenth birthday he was invested prince of Wales at Carnarvon Castle, and a year later, in June, 1911, he was invested as a knight of the *Order of the Garter* The outbreak of World War I gave the prince additional responsibilities. On November 17, 1914, he was gazetted as *aide-de-camp* to the commander-in-chief of the British Expeditionary Forces and went across to France. He served in many different capacities and was frequently under fire In 1916 he served in Egypt and later visited the Italian front

After the Armistice in November, 1918, the prince took up many public duties and he made tours in many different parts of the Empire Not only did he obtain, as a result of his travels, a knowledge of the life of the people in many parts of the Empire, but he studied the conditions of trade and industry, and proved a useful ambassador In a similar manner he visited many industrial centres at home, to enquire into the conditions of the people in the mining districts of northern England and Wales.

On his father's death in January, 1936, the prince of Wales became King Edward VIII. After a reign of only a few months, he abdicated the throne as he wished to marry a lady whom the nation could not accept as queen He is now known as H R.H the duke of Windsor Albert, duke of York, succeeded his brother and, taking his father's name, became King George VI.

King George V. was king of England from 1910 to 1936. He was born at Marlborough House, London, on June 3, 1865 He was the second son of Edward, prince of Wales, afterwards King Edward VII., and of his wife Alexandra He was christened George Frederick Ernest Albert, and was educated privately with his elder brother, Albert.

Prince George trained for the sea, and his success in the navy may be indicated by quoting a statement made about him by Admiral Hay, who said, "He is an accomplished naval officer."

The sudden death of his brother, Albert Victor, made him heir to the throne after his father, who was then still the prince of Wales, and brought his naval career to an end. He became duke of York and took his seat in the House of Lords in 1892. The following year he married Victoria Mary, only daughter of the duke and duchess of Teck.

On the death of Queen Victoria (January 22, 1901), the duke's responsibilities were considerably increased by his father's accession to the throne as Edward VII From March to November, 1901, the duke and duchess toured the Dominions, thus gaining much useful knowledge of the people in different parts of the Empire In Australia the duke opened the first parliament. On November 9, 1901, King Edward's birthday, the duke was created prince of Wales, after which he took over many more duties In 1905 the prince and princess visited India, and in 1908 made an extensive Canadian tour.

King Edward VII died on May 6, 1910, and the prince ascended the throne as King

George V. He and his consort, Queen Mary, were crowned in Westminster Abbey on June 22, 1911 Later in the year Their Majesties visited India, and the coronation ceremonies took place at the ancient capital of Delhi.

King George V. came to the throne at a time of unrest among the countries of Europe, and in August, 1914, began World War I. During the four terrible years, 1914–1918, the king served his country to the utmost. During that prolonged ordeal, he appeared in uniform when opening parliament and on other public occasions, the court, like the nation, was mobilised for active service. Several times he crossed over to France, being the first king since 1743 to join his armies in the field He also visited the Grand Fleet. He and the queen were untiring in visiting the sick and wounded, and mixed freely with their people, so gaining their affection and esteem. During the war the king changed his family name from Saxe-Coburg-Gotha to Windsor by royal proclamation. During the difficult post-war years of trade depression he continued to move constantly among his people.

Towards the end of 1928 the king contracted pleurisy and was seriously ill for several weeks. The illness aroused world-wide sympathy. A gradual recovery was made, and in the following summer an Empire Thanksgiving Service was held in the Stadium at Wembley, conducted by the archbishop of Canterbury and attended by the king and queen.

In 1935 the king celebrated the year of his Jubilee, and the respect and affection felt for him and all the Royal family were clearly shown at the celebrations. During Jubilee week the people made holiday in every town and village of the Empire. In London the main event of the celebrations was the triumphal procession of the king and queen accompanied by the Royal family, the Ministers of State, Admirals, Generals and Air Marshals, and the nobles and chief people of the Empire. Through streets lined with troops and police, and thronged with eager crowds, the procession passed from Buckingham Palace to St. Paul's Cathedral, where a solemn service of thanksgiving was held.

Less than a year later, on January 20, 1936, King George V. died The thousands who had cheered him in the Jubilee Procession now waited many hours in the queue to pay the last tribute of respect to his memory as his body lay in state in the ancient palace of Westminster Hall. He was buried with his parents in St George's Chapel, Windsor, and six kings attended the obsequies —Great Britain, Rumania, Denmark, Norway, Bulgaria and Belgium. His coffin was made by the village carpenter at Sandringham. At his funeral the crowds were greater than any that ever gathered in the streets of London He was succeeded by his eldest son, the prince of Wales, who took the title of King Edward VIII.

Queen Mary was the consort of King George V. and she is the mother of King George VI. She was born at Kensington Palace, London, on May 26, 1867, and was the eldest child and only daughter of the duke and duchess of Teck. Mary, the duchess of Teck, was a granddaughter of George III. The princess was named Victoria Mary Augusta Louisa Olga Pauline Claudine Agnes, but was known at home as May For some years the family lived at Kensington, but later removed to White Lodge, Richmond

On May 3, 1893, the princess became engaged to the duke of York, and the marriage took place in the Chapel at St James's Palace on July 6, 1893. The duke and duchess took up their residence at York House, St James's, London, and had a country residence, York Cottage, on the Sandringham estate in Norfolk. When the duke of York became prince of Wales, the princess took up the public duties which became her responsibility, and also accompanied the prince on an Empire tour and a special Indian tour.

As consort of King George V. she fulfilled many important positions. She is Lady of the *Garter*, Master of the *Order of the British Empire*, *G C.V.O*, and President of the

National Trust. Now, the Queen Mother, she lives in quiet retirement at Marlborough House, London

King George and Queen Mary had six children, one of whom was a daughter, Mary, now known as the Princess Royal. There were five sons of the marriage—Edward, the eldest, the duke of Windsor; Albert, the second son, who became George VI, Henry, duke of Gloucester, George, duke of Kent; and John, who died in 1919.

ROYAL RESIDENCES

Buckingham Palace is the London residence of the sovereign It has a fine situation in the West End of London between St. James's Park and the Green Park

In the early seventeenth century the site of the palace was a fashionable pleasure resort called Mulberry Gardens. Later, a house was built which became the residence of the earl of Arzington in the time of Charles II. In 1703 this house was pulled down and a new building designed by a Dutch architect was built for John Sheffield, duke of Buckingham and Normanby George III. bought the house in 1761 for £21,000, and went to live there, since when it has been the London residence of the sovereign. The palace was reconstructed and enlarged in 1825 for George IV. by John Nash. In 1846 the great eastern wing (360 feet long) which now forms the front of the palace was added by James Blore and in each succeeding reign additions have been made.

In front of the palace is the memorial to Queen Victoria (unveiled in 1911). Sir Thomas Brock was the sculptor, and it is chiefly of white marble with steps leading up to the central pedestal, which is crowned by a figure of Victory; at the base is a statue of Queen Victoria.

In 1913, to form a fitting background for the Victoria memorial, a new front was built to the palace from designs by Sir Aston Webb The front is of *Renaissance* style and faced with Portland stone.

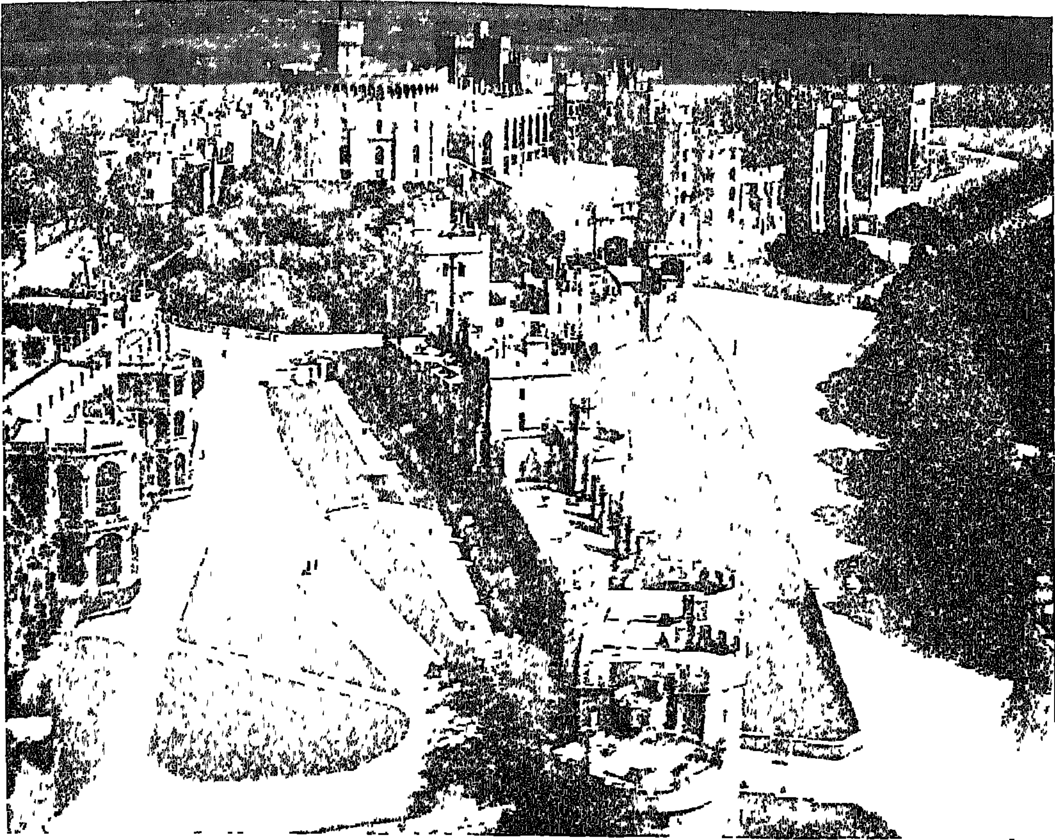
The chief state apartments are the throne room, the drawing room and the picture gallery, which contains many works of the English, Dutch, Flemish and French schools, including works by Reynolds, Wilkie, Rembrandt, Rubens and Watteau, the collection having been begun in George IV.'s reign.

Foremost among the events of the London season are the "Courts" which are held at the palace, and the garden parties in the beautiful grounds.

Windsor Castle has been a royal residence from the time of William the Conqueror. It is built on rising ground overlooking the river Thames and the town of Windsor, and is west of London. With the grounds it covers about 12 acres The castle was founded by William the Conqueror on the site of an earlier fortress, additions were made by Henry III. *c.* 1270, but the building was reconstructed by Edward III. in 1344, as a meeting place for Knights of the Garter, and has since been frequently extended. As rebuilt by Edward III. the "lower ward" contained the ecclesiastical buildings, the "upper ward" was the royal apartments, and the "middle ward" connecting the two was the Round Tower in which the Knights of the Garter were to meet, after the style of the legendary Knights of the Round Table.

The general arrangement of Edward's castle remains. In the lower ward are the ecclesiastical buildings—St. George's chapel and the Albert Memorial chapel, the deanery and the residences of the canons and of the military knights The Albert Memorial chapel was built by Henry VII. and converted by Queen Victoria into a memorial to the Prince Consort. St. George's chapel is the chapel of the Knights of the Garter.

On the east in the upper ward are the royal apartments and the state apartments. The latter consist of sixteen rooms—one of which is the throne room—richly furnished and containing many tapestries and paintings and wood-carvings, the last-named by the famous artist Grinling Gibbons. The north



[Photo Central Aerophoto Co, Ltd

WINDSOR CASTLE FROM THE AIR

terrace is reached direct from the main street of the town by the "hundred steps." From the terrace there is a wonderful view of the Thames valley

In the Home Park, one mile south-east of the castle, is Frogmore House, used from time to time by members of the royal family Here the Prince Consort was buried and Queen Victoria erected a mausoleum over his tomb. The Queen was buried here in 1901 The Great Park south of the castle consists of about 1,800 acres and is stocked with fallow deer The Long Walk, a magnificent avenue three miles long, leads from the Home Park into the Great Park to the edge of Virginia Water, a beautiful artificial lake Farther west is Windsor forest On the opposite bank of the river is Eton College, the famous public school

The royal family takes its name from Windsor On July 17, 1917, King George V. declared by proclamation that henceforth his family should be known as the "House and Family of Windsor."

Sandringham House, Norfolk, is the country residence of the royal family

The village of Sandringham is six miles north-east of King's Lynn and two miles east of Wolferton station on the N E Region The building is of red brick in the Elizabethan style, and was built between 1869 and 1871 by Edward, prince of Wales, afterwards Edward VII, and was his favourite residence.

It was damaged by fire in 1891. The surrounding picturesque park has an area of 200 acres York Cottage, on the estate, is the property of King George VI

Balmoral Castle is the royal residence in Aberdeenshire, Scotland. Situated on the river Dee, nine miles west of Ballater, it commands a wonderful view of the surrounding country In 1848 the estate was bought by Albert, the Prince Consort, and bequeathed to Queen Victoria In the years 1853-5 it was rebuilt in the Scottish baronial style. With the deer forests around it, the estate comprises more than 25,000 acres It became a favourite residence of Queen Victoria. The late King George V and Queen Mary usually spent part of the summer at Balmoral.

St. James's Palace is in Pall Mall and therefore not far from Buckingham Palace. The fine brick gatehouse and Chapel Royal are all that remain of a small palace built by Henry VIII. on the site of a leper hospital dedicated to St. James-the-Less. Other parts have been added by later sovereigns—Charles I., Anne, George I., etc.

After 1698, when Whitehall was burnt, until 1837, St. James's Palace was a royal residence Royal levées are still held here and it is to the Court of St. James's that foreign ambassadors are accredited In 1919, the prince of Wales took up his residence at York House in Ambassadors' Court

Charles I. slept in the palace the night before his execution, and Charles II , Mary, mother of William III , James II , his son, the "Old Pretender," Mary II., Queen Anne, and George IV., were born here. Queen Victoria and Prince Albert were married in the Chapel Royal, and also later, the duke of York (afterwards George V) and Princess Victoria Mary of Teck

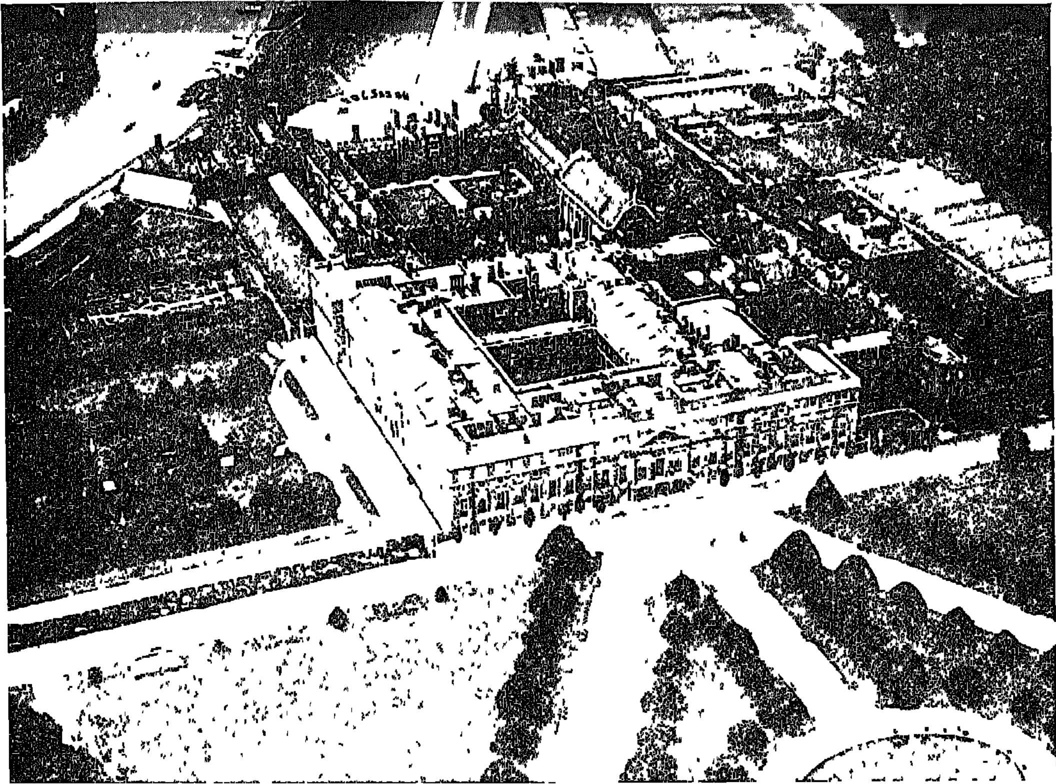
A wing connected the palace with Marlborough House, but this was burnt down in 1809 and now a road separates the two. Marlborough House was built by Wren for the first duke of Marlborough. It became the residence of Queen Mary after the death of King George V

Kensington Palace, London, was a former residence of the sovereign It is an enlargement of a private mansion, Nottingham House, built in Charles II's reign and purchased by William III. Sir Christopher Wren was responsible for the pleasing south front, but later additions by William Kent do not blend with Wren's work. The palace ceased to be a residence of the sovereign after George II 's reign, but has since been occupied by members of the royal family. The duke and duchess of Kent were living at the palace when their daughter, later to become Queen Victoria, was born Queen Mary, consort of George V., was also born at the palace.

The king's gallery and the grand staircase, in the wing built by Wren, are the best portions of the interior, and contain beautiful wood carving by the celebrated Grinling Gibbons.

Hampton Court.—This palace is on the left bank of the Thames above Kingston, and was built by Cardinal Wolsey (1515-20) He presented the building to Henry VIII. in 1526 in order to retain the king's favour. The king converted it into a royal palace and added the great hall and chapel. From this time until George III.'s reign it was a residence of the sovereign. In 1690 Sir Christopher Wren was commissioned by William III. to erect a new suite of state apartments, and, as at Kensington, the wood carving was executed by Grinling Gibbons. This famous artist, whose work may be seen in several of the royal residences as well as in various churches, is well known for his wonderful carving in wood of fruit, flowers and birds.

The red brick buildings cover eight acres and contain more than 1,000 rooms, the gardens having an extent of forty-four acres. The state apartments were restored and opened to the public in 1839 They are chiefly interesting for the pictures, many of which are fine works by Italian and British artists,



[Photo · Aerofilms, Ltd

HAMPTON COURT PALACE

and several of which were in the collection made by Charles I Among the tapestries are some which belonged to Wolsey and others to Charles I

In the gardens in the Clock Court is a remarkable astronomical clock made for Henry VIII in 1540, and still in working order. There are many old gardens, such as Henry VIII's Pond Garden, the Privy Garden and Queen Mary's Bower, and also a series of wrought iron screens designed by Jean Tijou, who worked under Wren The Home Park is 600 acres in extent, and near by is Bushey Park, 1,000 acres, famous for its avenue of chestnut trees

THE CROWN JEWELS

A crown is a circlet usually of precious metal It is worn on the head to indicate sovereignty Earliest crowns were probably a wreath of leaves or flowers, but, later, metal was used, ornamented perhaps with gold or colouring In England early kings wore crowns made of a metal circlet bearing as ornaments trefoils or flowers Later, the crown of William I had two half hoops forming an arch above the band. The English ancient crowns were destroyed during the Commonwealth in the early seventeenth century and new ones were made for Charles II and his consort. These

and later crowns were encrusted with precious stones.

The crowns, together with the sceptres of state and many other treasures, are housed in the Wakefield Tower or Jewel House in the Tower of London. The collection is known as the Crown Jewels. Most of the crowns, sceptres, etc., belong to the king's regalia, i e., emblems belonging to the sovereign and used at a coronation

The regalia include:—

1 The Crown of England, more often called St. Edward's Crown. This was remade for Charles II. but bears a resemblance to St. Edward's crown which was destroyed during the Commonwealth.

2 The Imperial State Crown made for Queen Victoria This contains over 2,800 diamonds, 277 pearls, 17 sapphires, 11 emeralds and 5 rubies. Of these jewels, one of the rubies, as large as a small hen's egg, belonged, it is said, to the Black Prince, and was worn by Henry V at Agincourt. One of the diamonds is the second largest portion of the Cullinan diamond presented to Edward VII by the Transvaal.

3 The Royal Orb; a globe 6 inches in diameter surmounted by a cross so that the total height is 11 inches. The globular part is of gold engirt with a band set with diamonds, pearls, sapphires and emeralds.

4. The Royal Sceptre or sceptre with a cross. In the top of this is the largest of the "Star of Africa" Cullinan diamonds It is borne in the king's right hand at a coronation.

5 The Sceptre with a dove, 3½ feet long, is placed in the king's left hand at a coronation.

6 St. Edward's Staff This is 4½ feet long and is carried before the king in a coronation procession It is also called the Rod of Justice and Equity, and is supposed to guide the king's footsteps.

7. Sceptres for the queen consort, one with a cross and one with a dove at the top.

8 The sword of State which is girded on the king at his coronation

9. Three Swords borne before the king at his coronation:—The sword of mercy, an unpointed weapon, the spiritual sword of justice, the "Curtana," an obtusely pointed weapon, and the temporal sword of justice, a sharply pointed weapon

10. The St. George's Spurs, called Great Golden Spurs.

11. The Ampulla or Golden Eagle This is of solid gold, in the form of an eagle with wings outspread The head screws off so that the vessel may be filled with oil which is poured out through the beak. There is a legend that the eagle was given to St. Thomas à Becket by the Holy Virgin It is said that he gave it into the charge of a monk of Poitiers, who secreted it and other treasures, together with a written account of the vision, in a church at Poitiers. Thence it was brought to the Tower of London by the Black Prince

12 The Anointing Spoon This is of pure gold 10½ inches long and is one of the few pieces not destroyed during the Commonwealth It is of the eleventh or twelfth century; its history is unknown

13. The queen's State Crown, which contains the famous Koh-i-noor diamond and a drop brilliant from the Lahore Treasury.

At a coronation which is performed by the archbishop of Canterbury, the king, seated in St. Edward's chair, takes the oath, is anointed with oil from the ampulla, and is invested with the royal insignia, including the golden orb, golden sceptre with cross, sceptre with dove and St. Edward's crown The ring has not been used in the last two coronations. The queen consort is then crowned by the archbishop of York.

In addition to the regalia, the crown jewels housed at the Tower include other crowns and coronets for sons and daughters of the sovereign Since the regalia never leave the country, a special crown was made for King George to wear at the coronation at Delhi in 1911, and this may be seen at the Tower

Other interesting pieces include the Ruby Ring, until recently used at a coronation

(A sapphire has now been substituted for the ruby) It is of gold with a large ruby A legend attached to the ring tells how Edward the Confessor gave his ring as alms to an old man. Later, two English pilgrims who lost their way in the Holy Land were guided by a very old man who said he was John the Evangelist; he gave them the ruby ring to return to their king and vanished. The only crown jewels in the world on view to the public are the crown jewels of England. A battalion of his Majesty's Guards protect them in the Tower, and about half a million people go to see them annually.

LONDON

St. Paul's Cathedral is the largest in Britain. The present building is the third which has been built on the present site In the early seventh century a cathedral was founded by Ethelbert, king of Kent, on the traditional site of a Roman temple to Diana. This church was dedicated to St Paul, and after many changes was demolished in A D 1083 to make room for a new cathedral.

The new building rose slowly; in 1135 much of it was damaged by fire, but the building was not finished till the end of the thirteenth century Early in the fourteenth century a spire was built It was then a magnificent monument of Norman and Early English architecture. In 1561 the spire was struck by lightning which caused the church to take fire The cathedral greatly needed repair when the Great Fire of London in 1666 almost destroyed the building

The present building was designed and built by Sir Christopher Wren between the years 1675 and 1710 Thus it has stood for over 200 years, a grand building in the heart of the busy city of London, at the top of Ludgate Hill, commanding a view of Fleet Street.

The cathedral measures 513 feet from east to west, and 248 feet from north to south across the transepts The top of the cross is 363 feet from the pavement and the dome is 145 feet in diameter (external measurement) Only three existing churches are larger than St Paul's, these are St. Peter's in Rome, and the cathedrals of Seville and Milan.

The dome, the commanding feature of the metropolis, consists of (1) an inner brick dome which is pierced at the top to render the lantern visible from below; (2) a brick cone which supports the lantern, (3) the outer dome which has a wooden framework covered with lead Inside the dome, around the lower part, is the famous circular Whispering Gallery. This gallery is 100 feet above the pavement and 108 feet in diameter. It is known as the Whispering Gallery because words whispered near the wall on one side can be distinctly heard at the other side The gallery is a favourable position from which to see the monochrome paintings on the dome. The paintings depict scenes from the life of St. Paul and are by Sir James Thornhill, who died in 1734. The north tower contains a fine peal of twelve bells. Great Paul in the south tower weighs nearly seventeen tons

In the crypt, which extends beneath the entire area of the cathedral, are buried many famous men. Nelson, Wellington, Wolseley and Wren are buried there, also many famous painters including Reynolds, Landseer and Turner The cathedral contains many memorials to those buried in it and elsewhere. Wren's grave is marked only by a plain slab with a Latin inscription meaning, "If thou seekest his monument, look around thee."

Westminster Abbey. The Abbey of St. Peter, which is England's great national shrine, occupies a site on which a church was first built in the eighth century It is the most widely celebrated church in the British Empire The site was originally an island surrounded by marshes, and the first church, a Benedictine abbey, was dedicated to St. Peter and named West Minster, probably because of its position west of the city of London.

Edward the Confessor rebuilt the abbey and associated it with a royal residence so that it became a Chapel Royal. Only remnants of the foundations of Edward's abbey have survived. The present building, with the exception of Henry VII's chapel, is one of the finest examples of Early English architecture in England, and was built chiefly by Henry III. in honour of St. Edward. When the church was built and consecrated, St. Edward's body was transferred to a magnificent shrine behind the high altar. From this time onward, kings and queens of England were buried in the abbey until the time of George II, since when sovereigns have been buried at Windsor. Additions to and restorations of the building were carried out by succeeding monarchs. The two western towers, designed by Wren, were added as late as the eighteenth century.

The abbey is cruciform in design, and is 531 feet long, and 203 feet broad across the transepts. The nave, 102 feet high, is the loftiest Gothic nave in England. Each transept has a beautiful rose window. Henry VII's chapel is virtually a separate church, with nave, aisles and five small chapels, and is a fine example of late-perpendicular architecture. The chapel was intended for a royal mausoleum but later became the chapel of the Knights of the Bath. A splendid series of carved oak stalls lines each side of the nave, and above them hang the banners of the knights The fan-traceried roof is exquisite

Sovereigns of England have been crowned before the high altar of the abbey since the days of Harold Under the coronation chair is the "Stone of Destiny," brought from Scone, in Scotland, by Edward I. after his invasion of that country. The sword and shield of Edward III. are still used at the coronation ceremony.

The abbey contains the tombs of many statesmen including Pitt, Fox and Gladstone. In Poets' Corner, in the south transept, lie Chaucer, Spencer, Browning, Dryden, Tennyson, Dickens and many other famous writers Other notable men buried in the abbey include Handel, Darwin, Lord Lister, Newton and Lord Kelvin.

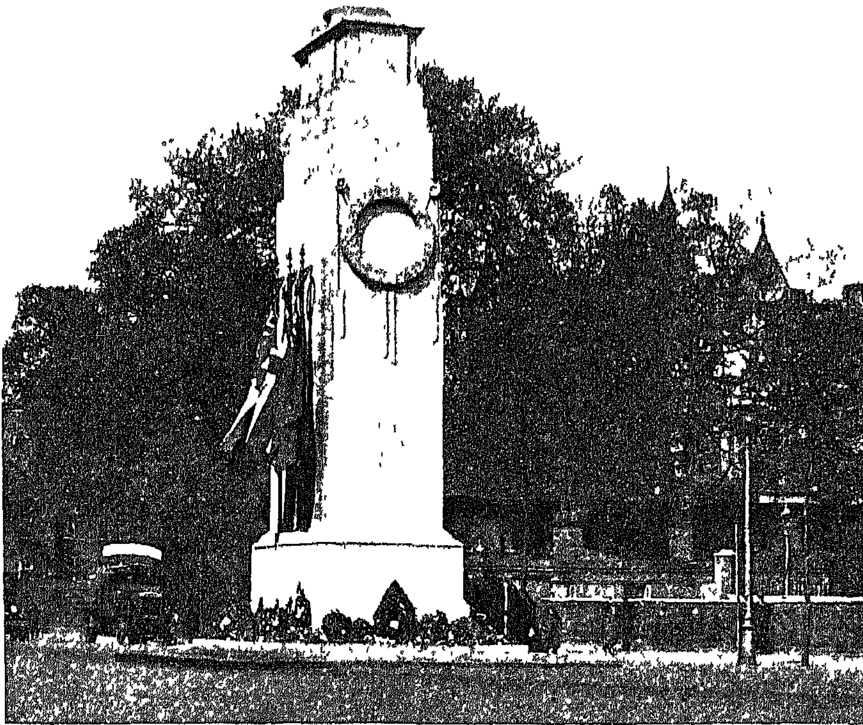
Near the west door is the grave of "An Unknown Warrior" where "rests the body of a British Warrior unknown by name or rank brought from France to lie among the most illustrious of the land. November 11th, 1920."

Whitehall is the famous London street extending southwards from Trafalgar Square and Charing Cross to Parliament Street. It contains the government buildings.

The name Whitehall is that of the palace built there about 1532 by Henry VIII. The importance of Whitehall may be said to date from the time of Wolsey, who lived at the mansion, then called York House, when archbishop of York After his fall the property was taken by the crown, renamed Whitehall and the palace built It was the chief residence of the court during the reigns of the Tudors and Stuarts, but was destroyed by fire in 1698, except for the banqueting hall, which is still standing.

The banqueting hall was built for James I. by Inigo Jones in 1622 and is in the Palladian style of architecture (named after Andrea Palladio, the Italian architect who introduced it) The hall is one of the noblest buildings in London, and is a constant inspiration to architects. The scaffold for Charles I.'s execution was erected in front of this hall and the ill-fated king stepped out to his execution from one of the windows In 1724 the hall became a Chapel Royal, converted for the purpose by George I. At the present time it is a museum known as the Royal United Service Museum, and contains military and naval exhibits.

On the opposite side of Whitehall (W. side) is the Horse Guards. The building dates from 1750 but took the place of an older building erected in 1641 as a guard-house for the palace of Whitehall The building has two wings connected by a clock tower arch. This archway opens on to the Horse Guards Parade where tourna-



[Photo A W Kerr

THE CENOTAPH

ments took place in Tudor times, hence the original name Old Tilt Yard. The parade is the scene of the ceremony of "trooping the colour" which takes place on the king's birthday The changing of the Horse Guards is a daily ceremony and is as familiar a sight as the changing of the guard at St James's and Buckingham palaces

The building itself has been the headquarters of the commander-in-chief of the home forces since 1904

Among other famous buildings in Whitehall the Admiralty offices, designed by Thomas Ripley, were built early in the eighteenth century as the headquarters of the navy. The wireless aerials on the roof of the building are a reminder that the officials can keep constantly in touch with the fleet. The War Office, designed by William Young, is a new building erected 1900-05. It replaced an older one called the Old Ordnance Office in Pall Mall. The secretary of state for war is head of this state department, and, with the other members, regulates the affairs of the British army.

The Home Office, Treasury and Ministry of Health form three great blocks of government buildings, and in Downing Street alongside the Treasury is the official residence of the prime minister. The India Office, Colonial Office and many other important buildings are in this famous thoroughfare.

Parliament Street is a continuation of Whitehall and at the end of it is Parliament Square in which are statues of five prime

ministers of the United Kingdom: Peel, Palmerston, Derby, Beaconsfield and Canning.

In the centre of Whitehall is England's famous memorial, the Cenotaph, erected in memory of all British men and women who died in the World War (1914-1918). The word cenotaph means "empty tomb" and comes from two Greek words —*kenos*—empty, *taphos*—a tomb. It is a name given to a monument erected to those whose remains are buried elsewhere or are irrecoverable.

The day before Peace Day, July 19, 1919, a temporary structure was unveiled in Whitehall in memory of those who fell in the World War I. Later, this was constructed in Portland stone after the design of Sir Edward Lutyens and was unveiled by King George V. on Armistice Day, November 11, 1920. It is a large rectangular structure 33 feet high and surmounted by an altar. Wreaths are carved on the sides and flags are fixed on the face. Its striking simplicity, dignity and proportion lift it above the level of the host of memorials that followed the war. Inscribed on the monument are the words "The Glorious Dead." The burial of the "Unknown Warrior" in Westminster Abbey took place on the same day as the unveiling of the Cenotaph.

The tragedy of the Second World War gave a new significance to the Cenotaph and instead of a solemn Armistice Day celebration formerly held on the site each year, Remembrance Day is now observed on the nearest Sunday to November 11, when wreaths are placed at the base of the monument and a short religious service, attended by the highest personages in the land, is held.

The Tower of London is an ancient fortress on the east side of the city of London and on the north bank of the Thames. Tradition asserts that Julius Caesar was the founder, but although Roman fortifications have been found beneath the site, the oldest portion, namely the magnificent White Tower, is of the Norman period. The site was an excellent one to fortify London against invasion by approach up the Thames.

The building of the White Tower was begun in 1078 by Gundulf, Bishop of Rochester, and was not completed till early in the next century. This tower is the central building, and is surrounded by a double ring of fortifications consisting of walls and towers gradually added until Henry III. completed the fort. The White Tower is 90 feet high and its outer walls are 15 feet thick; the exterior was restored by Wren in the reign of Charles II. In one of the rooms on the ground floor are instruments of torture, the rack, thumbscrews, and irons, used in bygone days to compel accused persons to confess their crimes. Guy Fawkes of the Gunpowder Plot was one who suffered torture.

St. John's chapel, on the first floor, is one of the most perfect examples of Norman chapels in England, and for many years state papers were housed here. The banqueting hall is now called the Armoury, and contains a fine collection of arms and armour. Rooms in the Bloody Tower and in the Wakefield Tower are said to have been those occupied by Sir Walter Raleigh during his periods of imprisonment, which totalled about thirteen years.

Many of the surrounding buildings of the inner ward are barracks, but one is the church of St. Peter-ad-Vincula (St. Peter-in-the-Fetters) dating from the early part of the fourteenth century, but much altered in Tudor times. Near by is the Tower Green, peaceful enough to the eyes of present-day people, but the railed enclosure is a reminder of those who met their death on the headsman's block which occupied that site. Their names include Sir Thomas More 1535, Anne Boleyn 1536, the Countess of Salisbury 1541, Catherine Howard 1542, Lady Jane Grey and her husband 1554. They were buried in the church of St. Peter-ad-Vincula. On the door of the church a brass plate bears the names of those who were executed outside the Tower on the public scaffold on Tower Hill. The site of

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this scaffold is marked just inside the railings of Trinity Square.

The inner or ballium wall surrounds the inner ward and has thirteen towers at intervals One of these, the Wakefield Tower, houses the crown jewels, chief of which are the regalia used at coronations. The Beauchamp Tower was for many years the chief prison for captives of rank, and the walls of one of the rooms are covered with inscriptions made by such important prisoners as Lord Guildford Dudley, husband of Lady Jane Grey. In the Bloody Tower the young princes Edward V. and his brother were murdered in 1483. Outside the ballium wall is the outer ward and then comes the outer or second line of fortifications. The moat, which was originally filled with water from the Thames and was an additional protection, is at the present time a drill ground Entrance to the Tower is by the Middle Tower across the moat and through the Byward Tower to the outer ward The present ticket office is near the site of an outer gate called the Lion Tower, because the king's menagerie was kept there from Norman times until 1834

The Tower was a prison from Norman times until the nineteenth century It was not only a fort and prison but also a royal residence from the reign of Stephen to the time of the Stuarts, the palace being demolished by Cromwell. The attendant staff, a corps of the "Yeomen of the Guard," are familiar to many as "Beefeaters"

The nickname "Beefeaters" had its origin in 1669, when Count Cosimo, grand duke of Tuscany, was in England, and, writing of the size and stature of this magnificent Guard, said, "They are great eaters of beef, of which a very large ration is given them daily at the court, and they might be called 'Beefeaters' "

The Yeomen of the Guard were the first permanent bodyguard possessed by the king of England, and were created by Henry VII apparently from among the men who had been into exile with him and fought with him at the battle of Bosworth in 1485 Their original duties were of the most comprehensive nature They were the king's personal attendants, day and night, at home and abroad, responsible for his safety on journeys, on the battle field and within the precincts of the palace They continued to guard the sovereign's person in war throughout the Tudor reigns The real fighting days of the Guard ended with the Tudor period, although as late as 1743 they accompanied George II to the battle of Dettingen. Now they attend on certain state occasions like the distribution of the Maundy Money and to search the vaults at the opening of parliament—a custom dating from the time of the Gunpowder Plot

During the World Wars, the Tower was again used as a prison, the ancient fortress has now resumed its position as an interesting relic of bygone days, and is annually visited by thousands of sightseers

The Houses of Parliament, or the New Palace at Westminster, where Great Britain's laws are made, are situated on the left bank of the Thames and extend along the riverside from Westminster Bridge southwards for over 300 yards They form the largest modern Gothic building in the world and are the noblest group of buildings in London. The site is the old palace of Westminster, in which parliament met and which was destroyed by fire in 1834 The new buildings, designed by Sir Charles Barry, R A , cover about eight acres Little wood was used in their construction, the framework being of iron to safeguard against fire There are eleven courtyards, and eleven hundred rooms, with a hundred staircases and two miles of passages

The Clock Tower at the northern end is a well-known structure It is 40 feet square and 318 feet high and each of the four clock faces is 23 feet in diameter. Big Ben, the famous bell on which the hours strike, weighs 13½ tons, it is now known in all corners of the land by those who have never seen the Clock Tower, but who put their

watches right by the time as broadcast by Big Ben The clock is called Big Ben after Sir Benjamin Hall, First Commissioner of Works at the time that the clock was erected.

The Victoria Tower at the south-west end is 336 feet high and the Middle or Lantern Tower 300 feet. The most imposing view is from the river, where the frontage is unbroken for 940 feet; its decorations are the statues, shields and arms of the kings and queens of England since the Norman Conquest. The buildings are of stone, early Tudor in style, and the details are beautifully executed.

Some of the apartments in the building are elaborately decorated. The King's Robing Room, the Royal Gallery and the Prince's Chamber are at the southern end. The first is decorated by frescoes illustrating Arthurian legends, the second has a gilded ceiling, and the third contains portraits of sovereigns of the house of Tudor.

The House of Lords may be considered as one of the most beautifully decorated rooms in the country. It is 97 feet long, 45 feet wide and 45 feet high. The stained glass windows contain figures of all the English sovereigns since the Conquest, and between the windows are statues of the barons who signed Magna Carta. The thrones of the king and queen and the prince of Wales are at one end, and in front is the Woolsack of the lord chancellor. On each side of the House are the government benches. The peeresses' galleries are around the chamber and the distinguished strangers' gallery above the thrones. The House of Commons is rather smaller, being 70 feet long, 45 feet wide and 41 feet high The speaker's chair is at one end, the benches for members on each side and the ladies' gallery above the speaker's chair. Four corridors leading to all parts of the building meet in the central hall, an octagonal chamber, beautifully decorated —stone statues of English sovereigns occupy the niches—and a much frequented part of the building. To the west is St. Stephen's chapel, in which the Commons sat from 1547 till the fire of 1834. Westminster Hall differs from the rest of the building in that it is part of the old palace of Westminster, and the only part which escaped the fire of 1834. Originally it was built for William Rufus and was completed in 1099 From 1394 to 1399 Richard II remodelled and enlarged it, adding the north porch and towers, raising the walls and constructing the oaken hammerbeam roof. The roof strengthened by steel still remains, elaborate repairs being made in 1914 and in later years Westminster Hall has been closely associated with the history of the land. From 1225 till 1882 (when the Law Courts in the Strand were opened) it was the chief law court of England and in it many famous people were tried, among them Sir William Wallace, Sir Thomas More, Anne Boleyn, Lord Strafford, the Seven Bishops, Warren Hastings and Queen Caroline. Richard II. was deposed by the Lords of the Council in 1399 and later Charles I. was condemned in Westminster Hall. Coronation banquets were held here till the time of George IV. Thus Westminster Hall is one of the chief centres of English history.

Note—During the Second World War bombs dropped by German aircraft wrecked the debating chamber of the House of Commons but the new chamber is almost a replica of the old one

The Mansion House.—The Mansion House is the official residence of the lord mayor of London and is therefore an important and interesting building The lord mayor is associated in the minds of London children with the great procession which passes through the streets once each year, on November 9, a few weeks after the election of the new mayor. In this procession all the officials of London take part, and the decorated cars which delight the children sometimes illustrate events in the history of the great city Such an important person as the lord mayor needs a house in which he can hold receptions and banquets. Before the Mansion House was built the banquets

were held either at the lord mayor's private residence or in one of the halls belonging to a city company.

The Mansion House is in one of the busiest parts of London and right in the heart of the city It is at the junction of two streets, Poultry and Cornhill, and opposite to it is the Bank of England It was designed by the architect, George Dance, and though begun in 1739 was not completed until 1753. To make room for the Mansion House a market for fruit and vegetables called the Stocks Market had to be pulled down. Some people say that the flower named "stock" gets its name from this market The fruit market was built on the site of a fish market which was burnt in the great fire of London, 1666. The Stocks Market was so named because before the first building was erected in 1282 the "Stocks" of London Town occupied this site Therefore many must have suffered punishment on the spot where now lives the head of the corporation, the governing body of the city of London Such a building as the Mansion House costs an enormous amount of money, and this was obtained in a very unusual manner. It was money accumulated as fines imposed on those who refused the office of sheriff of the city of London By 1736, £20,700 had been accumulated in this way. The procedure was finally declared illegal

The building, built of Portland stone, has an imposing front, with a portico of six fluted Corinthian columns. Within the pediment, i.e. the triangle above the portico, the sculpture designed by Sir Robert Taylor shows a female figure crowned with turrets This is a symbol of the city of London. Inside the building are many reception rooms of which the chief is the Egyptian Hall This room, designed by the earl of Burlington, was modelled on an Egyptian chamber described by Vitruvius, a Roman architect It is 90 feet by 60 feet, and has a gorgeously decorated roof which is supported by columns The names of some of the other rooms are: the Long Parlour, the Venetian Room and the Old Ball Room. Above the building flies the flag of London showing on a white ground the cross of St. George and the sword of St. Paul

The Royal Mint.—At the present day when money is used in all parts of the world it is not easy for us to think of the possibility of purchasing things without it. In very early times when a man needed goods from a neighbour he carried out his purchase by exchange, or by barter Such a method led to difficulties; a standard measure of value was soon needed, and so money came into use Many different things have been used as money in different parts of the world—cattle, sheep, salt, tea, ivory, shells, etc Indeed, in parts of Africa nomadic peoples still reckon wealth according to the number of cattle a man possesses Gradually money has come into use in all parts of the world, and coins such as we use to-day were made in ancient Greece

Herodotus tells of the establishment of what was probably the first mint by Gyges, in Lydia, in the eighth century B C The Greeks introduced the art into Italy and other adjacent countries, but it was the Romans who developed the art and laid the foundations of modern minting At first iron was used, but because of its weight it was superseded by gold and silver. At first coins were made of pure gold and silver, but copper was added by the Romans. This was done intentionally, partly because copper was cheaper, but also because the alloys of gold and copper, or silver and copper, are harder than the pure metals To-day a definite proportion of gold is used in the alloy; e g , in Britain twenty-two parts of pure gold out of a total of twenty-four is the standard fixed by the government.

In Britain gold and silver coins were minted before Roman times, and in Norman times there were about seventy mints in different parts of the country These were reduced until by the eighteenth century all coins were minted in London, at the Tower. In 1810 the Royal Mint was removed from the Tower to the present building, an

imposing structure on Tower Hill. The site of the Mint was that of a Cistercian abbey called St Mary Graces, founded by Edward III. about 1350 Sir Isaac Newton was Master of the Mint from 1699-1727 and he is said to have invented the milling of the edges of coins to prevent fraudulent clipping. The office of master has been merged with that of the chancellor of the exchequer, but the building is really controlled by the deputy master, who is a civil servant. There are branches of the Mint at Melbourne and Perth in Australia, and at Ottawa

The method of making gold and silver coins and the machinery used are very interesting. The refined metal is melted and cast into bars. It is then sent to the "draw-bench," a wonderful machine which rolls out the metal to the exact thickness required —marvellous when it is realised that a hair's breadth difference will affect the weight of a gold coin The next machine punches circular discs from the metal sheets, cutting out several hundreds a minute. The discs are known as blanks, and the next step is to raise the edges of them, thus forming a rim to prevent too rapid wearing. The blanks are baked or annealed in a furnace and are then cleaned, after which they are ready to be stamped Until the Middle Ages coins were struck by hand hammers and in Roman times large coins were often cast. The modern method as used in England is carried out by an ingenious machine which stamps both sides of the coins at once, feeds itself with the coins to be stamped and strikes about sixty coins a minute. Each blank is placed on a fixed die and pressed with a second To prevent the coin squeezing out it is held in a collar, the inside of which is cut in fine grooves which form the milled edge The coins are finally tested and weighed automatically by machines which reject them if they are too light or too heavy. Sample coins are taken in a pyx or box and weighed annually by the Goldsmiths' Company The test is called the "trial of the pyx." Coinage is the prerogative of the crown acting through parliament.

The British Museum.—A great many people make collections of things which interest them Many hobbies take the form of collections such as postage stamps, china, pictures, etc If similar collections are made by a public body of people such as a town or a nation, the collection may be large and include all kinds of relics of interest to the people. A suitable building is needed to house the collection and thus a museum is formed.

The British Museum, in Bloomsbury, London, is one of the greatest treasure houses in the world It originated in 1753 when Sir Hans Sloane's collection of books and MSS, coins and medals, and many other specimens, was purchased by the nation. Montague House, on the site of the present building, was purchased to house this collection, and that of Sir Robert Cotton, which had been presented to the nation in 1700 The museum was first opened to the public in 1759, and since 1810 has been accessible to all, free of charge. Other collections were quickly added to the original ones, either by bequest, gift or purchase, and during the years 1828-57 the old Montague House was pulled down and the present building erected. Additions have been made since, e g., the King Edward VII Galleries in 1914

In the centre is the circular domed reading room 106 feet high and 140 feet in diameter. Its dome is second in size to that of the Pantheon, in Rome The library is the largest in the world; it contains about 4,000,000 volumes on fifty miles of shelves. Its catalogue consists of more than 1,000 volumes arranged on shelves round the desks in the centre. The number of books is rapidly increasing. This is easily understood when we remember that a copy of every book or pamphlet published in the United Kingdom must be sent to this library The great reading room seats four hundred and fifty-eight readers, and in addition there is an inner ring within which the officials carry on their

work. Many rare books are housed in the north library

The many treasures of the museum, housed in a series of exhibition galleries, tell the story of civilisation without need of words. They include relics of Assyrian, Egyptian, Greek, Phoenician and Roman civilisations, collections from India, China and Japan, books, pottery and prints from all periods to the present day. The sculptures from Nineveh from the palace of Sennacherib and Ashurbanipal include those which represent the capture of Lachish described in the Bible in the Second Book of Kings. These people who lived nearly 3,000 years ago wrote their records on clay, which was then baked hard and so has been preserved. Some of the tablets tell the stories of the Creation and the Flood, as they were known to the Assyrians. Among the Babylonian treasures is a cast of the stone on which were carved the laws of Hammurabi. The Egyptian treasures include numbers of mummies and mummy cases, many of which are 3,000 years old The Egyptians, believing that the souls of the dead would return to reinhabit their bodies, practised embalming on an elaborate scale, and buried with the dead many things used in daily life in Egypt. From these much has been learnt of early Egyptian civilisation. In the Elgin room are the remains of sculptures by Pheidias and his assistants from the Parthenon at Athens. They were brought to England in 1801 by Lord Elgin and are called the Elgin Marbles The frieze has been arranged around the walls of the room. It represents the Pan-Athenaic festival procession and the presentation of a new robe to the image of the goddess

In other parts of the museum there are wonderful collections of pottery, coins, weapons and manuscripts

Lambeth Palace.—Before the days of the steamship and factory the banks of the river Thames at London possessed some of the finest residences in the country, including a series of riverside palaces Only two of these, Lambeth Palace and Somerset House, are still standing. Since the days of Edward I. Lambeth Palace has been the residence of the archbishops of Canterbury The palace is on the right bank of the river, south of Westminster.

The building occupying this site was originally known as Lambeth Manor, and the nearness of what was the village church is a reminder of the old manorial system Hubert Fitzwater, archbishop of Canterbury, secured the building at the end of the twelfth century. Nothing of the original edifice exists, the present one, partly of red brick and partly of grey stone, varies from Early English to Late Perpendicular architecture The old brick buildings are the earliest examples of brickwork in London.

The chapel stands on a crypt said to belong to the old manor house and is the oldest remaining part of the palace. The chapel was built in 1245 but has been altered considerably and has a modern roof and modern stained glass windows The library housed in the Great Hall contains 30,000 books, including many treasures such as the Gospels in Irish, which once belonged to Athelstan, and the Gutenberg Bible on vellum From the river, the huge gatehouse called Morton's Tower, the Great Hall and the so-called Lollards' Tower can be seen The last named, dating from 1440, was often used as a prison, but it is unlikely that the Lollards, followers of John Wycliffe, were imprisoned here.

In the chancel of St. Mary's church five archbishops are buried Beatrice of Modena, wife of James II., sheltered under the porch from a storm when she fled from Whitehall in 1688.

Part of the grounds belonging to the palace have been made into a public garden which is known as Archbishop's Park.

The Zoological Gardens.—The name is given to land used for the exhibition and study of living animals In London the Zoological Society was formed in 1828, and the gardens, which are in Regent's Park, contain a living collection of most kinds of mammals, birds and reptiles from

all parts of the world The collection began in 1828 with the old Tower menagerie and gifts from explorers, naturalists and others, as a nucleus. Now, the area covered is about thirty-five acres and the collection has always been the finest in existence, if species and rare animals be considered rather than the number of individuals The Gardens are arranged in two sections, an oblong abutting on the Albert Road and a southern triangular section, the two parts being connected by subways under the Outer Circle Road There are about seventy enclosures, houses, dens, aviaries, pools, etc. The monkeys, always ready to be fed with dainty morsels, attract many visitors, young and old. The lions include playful cubs which have been bred and reared in the gardens. The Mappin Terraces allow the bears, deer, goats, etc., greater freedom than is possessed by many of the other animals. The terraces consist of a series of tiers of open enclosures with footpaths along the base outside the railings. The various bears, which are untiring in sitting up to beg for food, are the chief attraction of the terraces.

The Aquarium, containing over 3,000 fishes, was added in 1924 and is a marvellous achievement, the most up-to-date inland aquarium The fish are exhibited in huge tanks with glass fronts, lighted from the top, thus affording excellent views of all the specimens as they swim about. In the fresh-water room, specimens of all kinds of fresh-water fish of British and European waters may be seen The wonders of the sea are shown in the marine room, and the tropical specimens include some very small, brightly coloured fish and others of huge size. The sea water was brought from the Bay of Biscay for the tanks, and both the fresh and the salt water in the aquarium are prevented from becoming stagnant by continual circulation Should copper or zinc come into contact with the sea water the fish would quickly die of metallic poisoning, therefore great care is given in the construction of tanks and pipes, to choose the right metals for the purpose. The piping is made of chemically pure lead or of iron lined with glass enamel The water is oxygenated by passing compressed air directly into the show tanks, and by discharging the water into the tanks with great force through a narrow nozzle, causing what looks like a smoke cloud of bubbles Great care is given to keep the water in the temperate aquaria at a temperature of about 60° all the year round, both heating and refrigerating systems have to be used to ensure this A series of filters is used for cleaning the water, and some is stored in the dark in order to kill noxious bacteria.

The Insect House shows all stages in the development of insects Interesting specimens include leaf and stick insects, water boatmen, bird-eating spiders, etc

Rare animals include the takin, a large goat-antelope from Tibet, an albino African monkey, Indian flying foxes, the bear-like panda, and the Wallick's deer. Many of the animals, birds, etc., are displayed among surroundings suggestive of their natural environment. This is especially noticeable in the Reptile House, in which each enclosure contains suitable plants and a natural arrangement of rocks, rock pools, logs, etc.

The Zoological Society has bought a property of nearly 500 acres in the Chilterns, thirty miles from London, to develop an open-air Zoo. Here, at Whipsnade, wild animals live, as far as possible, a life of freedom; and visitors may watch the habits of many wild creatures living a natural life.

Kew Gardens.—Kew Gardens is the popular name for the Royal Botanic Gardens at Kew near London. "Come to Kew in lilac time." So say the posters on the Underground Railway stations in all parts of London In lilac time, namely, in the month of May, the gardens are a wonderful sight with laburnum, hawthorn, chestnut, gorse and many other trees and shrubs in full bloom. Almost every month of the year brings its wealth of flowers—crocuses, daffodils, tulips and rhododendrons in spring, roses and many others in summer,

Michaelmas daisies, chrysanthemums and dahlias in autumn. In winter-time, when all the flowers have faded and most trees are bare of leaves, greenness is still to be seen, for the evergreen pines, firs and many other trees keep their leaves through the winter. Winter and summer the hothouses are full of plants of other lands, and some of these hothouses are gardens in themselves. The largest, the palm house, contains towering palm trees and so many creepers that they almost form a leafy roof under the glass one. The temperate house seems to have some interesting flowers or fruits at all seasons. One house has plants from the wet tropical forests, another is full of begonias and a third has many peculiar plants called "insectivorous" because they live on insects

The gardens, which have an area of 288 acres, were formerly the grounds of Kew House, and a botanic garden was formed here by Lord Capel and extended by Princess Augusta, mother of George III From 1772-1820 Sir Joseph Banks was honorary director of the gardens, and introduced plants from abroad. In 1840 the gardens became a state institution and under the directorship of several famous botanists, such as Sir W. Hooker, Sir J. Hooker, and Sir David Prain, have attained the foremost rank among the botanical gardens of the world The aim of the institution is the advancement of the study of plants, and the directors are advisers of the government on all matters concerning plants. The introduction of new plants into Britain or into other parts of the empire is an important side of the work at Kew. In 1860 the cinchona plant from which quinine is obtained was introduced into Ceylon from S America, and in 1875 rubber from Brazil was planted in Malaya—both introductions were carried out by the directors of Kew Gardens

Within the grounds are about 24,000 different species and varieties of plants arranged systematically. In addition to the hothouses there are museums containing products of plant life from all parts of the world, also a library and herbarium. The pagoda, designed by Sir William Chambers, was built in 1761 and is 165 feet in height. It is not a true copy of a Chinese pagoda because it has English windows and the angles of the roofs differ from those in a true pagoda. The new flagstaff of the gardens was erected in 1920 It is 215 feet high and was the gift of British Columbia It is one of the tallest flagstaffs in the world This straight "stick" of Douglas fir travelled 9,000 miles by sea from the forests of British Columbia which contain innumerable tall fir trees covering thousands of acres

EDINBURGH

The Castle.—The origin of Edinburgh is obscure, lost amid myths and legends. The rock from which the castle towers over the modern city shows evidence in its volcanic nature of upheavals of the earth long before the advent of man From earliest days a fortress, possessed in turn by Britons, Romans, Saxons, and Picts, has occupied the site. Other evidence of the antiquity of the settlement is suggested by the name Arthur's Seat given to the hill which overlooks Holyrood, and which suggests connexion with the legendary King Arthur. From the hill a magnificent view of the city, the Firth of Forth and the land of Fife is obtainable.

Probably the beginnings of the future city were rough huts of the early inhabitants of the Scottish lowlands, some of whom sought the protection of the castle on the rock

Definite records are available that in the seventh century A.D Edwin of Deira gained the throne of Northumbria, and to keep the northern people in check he took their fortress and around the rock built a new village which came to be called "Edwin's burg" or town From this time the history is clear and always centres around the castle.

On three sides the rock drops sheer down to the valley below, while to the east a narrow ridge known as the "Royal Mile" stretches to Holyrood Palace. The old town is clustered near the castle and is



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EDINBURGH

characterised by lofty buildings separated by narrow closes or paths. These were a consequence of building the city on the narrow ridge just described, and the result was such congestion that in the eighteenth century the marshes north of the castle were drained, and there was built the new town which contrasts strangely with the old The tall buildings of the old town have been termed by Robert Louis Stevenson "beehives ten storeys high"

The removal of the capital of Scotland from Dunfermline to Edinburgh dates from the time of King Malcolm Canmore, whose wife, Margaret, sister of Edgar Atheling, persuaded him to change their residence. One of the most interesting buildings in the castle is St Margaret's chapel, a small Norman chapel probably built for this queen, who is remembered for her piety. The chapel is one of the smallest churches in Great Britain, being only 17 feet by 11 feet It was restored in 1853 by command of Queen Victoria, and recently the small windows have been renewed with figures of St Andrew, St Ninian, St. Columba, St. Margaret and Sir William Wallace

The castle has a fine approach, called the "esplanade" During the reign of Charles I the esplanade was declared to be part of Nova Scotia, in order that newly made Nova Scotian baronets might "take seisin" of their new possessions This decree has never been annulled, and thus the strange situation occurs that legally this portion of Edinburgh is in Canada! On the esplanade are many monuments and statues, including a fine equestrian statue of field-marshal Earl Haig

After entering the castle by the drawbridge over the ancient moat, a steep narrow path leads to the old state prison known as Argyll's Tower, part of the buildings erected by David II in 1358. It has walls 10 feet to 15 feet thick. In it were imprisoned the marquis and earl of Argyll, father and son, before their execution for adherence to the Covenant. The Argyll battery is on the edge of the cliff overlooking Princes Gardens, which are at the foot On the Half Moon battery is the time gun fired daily at one o'clock, by connexion with an electrically controlled clock at the Royal Observatory on Blackford Hill

Near the southern edge of the rock are the historical apartments In Queen Mary's bedroom, on June 19, 1566, was born the heir who united the English and Scottish crowns and became James VI of Scotland and I of England. There is a traditional story that the infant was let down in a basket from the height of the rock and taken away that he might be christened in the Catholic faith. This may be a confusion with the removal of James II. of Scotland from chancellor Crichton Another legend tells that Mary's son died, and that for political reasons, to prevent disturbances, another child was substituted. If this was done the secret was well kept, as Mary believed that James I was her son. The legend was given fresh importance when, in 1830, a small coffin containing the bones of an infant was discovered in the wall of Queen Mary's room. It is one of the mysteries in Scottish history.

In the crown room are the Scottish regalia which include a crown, sceptres, sword of state, jewels, and other interesting pieces. Unlike the English regalia, which (except for a few pieces, such as the Black Prince's ruby, the ampulla and spoon and Queen Elizabeth's salt cellar) were made for Charles II, the Scottish regalia are of great antiquity. The crown of Scotland is said to have been used at the coronation of Bruce in 1314.

The old parliament hall or banqueting hall is now a museum chiefly of armour. It is believed that the earlier meetings of the Scots estates or parliament were held here

The culmination of all the buildings of the castle is a modern one, namely, the Scottish National War Memorial It is a marvellous piece of work, unparalleled anywhere in the world, erected by the country in honour of their fellow-men who fell in World War I. It rises from the highest part of the castle rock, and has a sanctuary facing north, with east and west transepts. In the bays of the transepts are memorials to individual regiments, the colours of the regiments and books recording the names of those who died The windows are of stained glass illustrating various aspects of the war. Aeroplanes, warships, red-cross workers, munition workers—nothing has been forgotten,—and yet all suggests an atmosphere of peace The sanctuary is shut off by bronze gates, and within it the walls are covered with figures carved in bronze depicting every type of Scotsman or Scotswoman who took part in the war The figures are arranged in procession around the sanctuary walls The whole building centres upon the altar in the sanctuary. This rests on an outcrop of the rough virgin rock which stands up from the floor, and on it is a casket in which is kept a record of the names of all the 100,000 Scotsmen from all parts of the world who died in World War I.

The Palace of Holyroodhouse.—At the opposite end of the Royal Mile, composed of the Lawn Market, High Street and Canongate, is Holyroodhouse with Salisbury Crags and Arthur's Seat for a background In 1128 David I founded the abbey of Holyrood, first on the castle rocks, then in its present position. According to a fifteenth century legend the dedication of the abbey to the Holy Rood, the Virgin and All Saints was supposed to be in gratitude for the king's deliverance from danger whilst hunting. The legend tells that David, when hunting near Arthur's Seat, was in

danger of his life from the charge of a huge stag, but the latter fled on the miraculous appearance of a rood or cross It is more probable that the name is associated with a golden casket in the form of a crucifix bearing an ebony image of Christ and containing what was regarded as a splinter of the True Cross This casket was supposed to have been brought to Scotland by Princess Margaret who became Queen Margaret, David I 's mother. It was known as the Black Rood of Scotland, was surrendered to Edward I. on his invasion of Scotland in 1291, and taken to England. Later, it was placed in Durham cathedral, but disappeared during the Reformation.

James IV lived here and began building a palace. James V. built some of the older portions of the present palace, including Queen Mary's apartments. The abbey and part of the palace were burnt during the English invasion (1544-69), but rebuilt On November 13, 1650, part of the palace was burnt accidentally and rebuilt by order of Cromwell in 1658 Cromwell's restoration was pulled down by order of Charles II. in 1671, and the existing palace built anew, except for the north-west tower and Queen Mary's apartments which had escaped the fire each time The new towers are copies of the older ones and the general style of architecture is French, the building surrounding a quadrangle so that the state apartments are on the south side and the picture gallery and other historical apartments are on the north side.

The picture gallery, the largest apartment in the palace, is 150 feet long, 24 feet wide and 20 feet high. Prince Charles Edward, the young Pretender, held balls and levées here during his brief stay in Edinburgh (1745-6). At the present day the lord high commissioner to the general assembly of the Church of Scotland holds his levée in the picture gallery in May each year. The walls of the gallery are hung with one hundred and six mythical pictures, "portraits of kings who, if they ever flourished at all, lived several hundred years before the invention of painting in oil colours," says Scott in his description of the room The portraits were painted by James de Witt, a Fleming, who completed the one hundred and six works in two years for £120, supplying his own colours and canvas!

The other historical apartments include the duchess of Hamilton's drawing room, Lord Darnley's apartments and Queen Mary's apartments. Lord Darnley's apartments are the audience chamber, his bedroom and dressing room, and contain many portraits and interesting tapestries Queen Mary's audience chamber has a panelled ceiling bearing the arms and initials of royal persons. The chairs and furniture are wonderfully preserved and are said to be those used by Charles I. when at Holyrood. Queen Mary's bedroom, smaller than her audience chamber, also has emblems and initials of Scottish sovereigns on the ceiling, and the walls are hung with tapestries The bed is said to be that of Queen Mary, but is often considered to be of much later date In addition, there is a small dressing room, and the supper room where the Queen's favourite, Rizzio, was attacked and murdered At the top of the staircase outside the audience chamber is a brass plate which marks the spot where Rizzio's body was left after the murder, March 9, 1566

The abbey, which was destroyed by the English (1544-69), and rebuilt as the Chapel Royal in 1672 by James VII of Scotland and II of England, was partly destroyed during the Revolution. The walls of the nave are the only parts now standing. The foundations of the demolished parts of the church have been uncovered, and in 1911 it was found that those of the choir rested on foundations of an earlier Christian church. Many Scottish kings and queens are buried in the nave,—David II, James II. and his queen, Mary of Gelderland, James V. and his first queen, Madeleine, Lord Darnley, consort of Mary, queen of Scots James VII. who restored the nave as the Chapel Royal, 1672, instituted the Order of the Thistle. In 1906 the late earl of Leven and Melville left

£40,000 for the restoration of the Chapel Royal, but experts advised that this would be impossible without the ancient architecture almost disappearing and so the scheme was not proceeded with.

The Scott Memorial.—Edinburgh and the border counties are rich in memories of Sir Walter Scott, a native of Edinburgh and one of the most notable of British novelists

The Scottish people have erected to his memory what is possibly the world's finest monument to a man of letters. It is in the East Princes Gardens and is a familiar feature of Edinburgh. The monument was erected between 1840 and 1844 Lord Jeffrey wrote an inscription to be graven on the plate when the foundation stone was laid. It is as follows, "This Graven Plate deposited in the base of a votive building, on the 15th day of August in the year of Christ 1840, and never likely to see the light again until all the surrounding structures are crumbled to dust by the decay of time, or by human or elemental violence, may then testify to a distant posterity that his countrymen began on that day to raise an effigy and architectural monument to Sir Walter Scott whose admirable writings were then allowed to have given more delight and to have suggested better feelings to a larger class of readers in every rank of society than those of any author with the exception of Shakespeare alone, and which were therefore thought likely to be remembered long after this act of gratitude on the part of the first generation of his admirers should be forgotten. He was born at Edinburgh 15th August, 1771, and died at Abbotsford 21st September, 1832"

The cost of the monument was £15,560 and the architect was George Meikle Kemp, a young self-taught artist, who, working as an ordinary mason, had travelled in Europe studying Gothic architecture Unfortunately he was drowned before the monument was finished.

The monument is 200 feet high and is in the form of a Gothic spire of old red sandstone Four arches support the central spire and form a canopy for the figure of Scott beneath. The figure is carved out of grey Carrara marble, and shows Scott seated wrapped in a shepherd's plaid and accompanied by his favourite hound, Maida. It is the work of Sir John Steell, R S A. Above the centre of the four arches of the monument are niches containing statues. These are, on the north, Prince Charles Stuart, south, the Lady of the Lake, east, Meg Merrilees, west, the Last Minstrel Four flying buttresses 90 feet high terminate in pinnacles. At suitable spots all over the monument are statues of the principal characters in Scott's poems and his *Waverley Novels*, e g , Rob Roy, Dominie Sampson, Meg Dods, Jeanie Deans, Robert Bruce, etc By means of a staircase inside, a series of galleries may be reached The first of these leads to a central room used as a museum for relics of Scott.

St. Giles's Cathedral.—From very early times a church has stood on the site occupied by St Giles' When Richard II of England invaded Scotland in 1385 and burnt Edinburgh, only the porch, part of the nave and the spire escaped destruction The church was rebuilt and chapels and side aisles added. The transepts were built later.

Towards the end of the sixteenth century the church was partitioned off and formed two "kirks"—the High or Parish Church and the Tolbooth John Knox preached in the latter. Other parts of the building were used as grammar school, town clerk's office and prison. Later the building was divided into four churches and was not used at all for secular purposes

One aisle of the church, known as Preston aisle, is named after William Preston, of Gorton, who deposited here the arm bone of St Giles which he brought from Flanders, and from this relic the church takes its name

On Sunday, July 23, 1637, an incident occurred which is known throughout the British Islands Charles I had ordered the English Church service to be read in all the churches in Scotland. As this was being done in St. Giles' by Dean Hanney, a Scottish

woman known as Jenny Geddes threw her stool at his head, and the result was a riot. Tablets to Jenny Geddes and Dean Hanney may be seen in the cathedral.

After a later attempt to establish episcopacy the state bishop was ejected in 1688, and since then the church has had no official claim to its title—St. Giles's cathedral.

During the nineteenth century many alterations were made and the fine Norman north door was removed. The building was reopened as one church in 1883

The spire or "crown of St Giles" has remained throughout all the changes in the structure of the building. In form it represents a crown, and is one of the finest examples of this type of spire The west door is modern Above it are niches containing statues of kings, queens, bishops and others who have been connected with the building, e g., Alexander I., David I., Queen Margaret, Robert Bruce, James I and John Knox

The royal pew is in the Preston aisle. The lord high commissioner occupies the pew as representative of the sovereign at the assembly of the Church of Scotland.

The church contains memorials to many famous Scottish churchmen, statesmen, soldiers, etc In the Albany aisle is a memorial to John Knox and in a chapel off the south transept there is a beautiful bronze memorial to Robert Louis Stevenson. It is the work of St. Gaudens, and shows the author on a couch with pen and paper in his hands. It was erected by admirers of the famous author in all parts of the world.

Perhaps the most interesting chapel in the building is the beautiful example of modern Gothic architecture called the Thistle Chapel. It is the chapel of the "Most Ancient and Most Noble Order of the Thistle" and was opened by King George V. and his consort Queen Mary when they visited Edinburgh in 1911 The building is small but beautifully decorated The roof is elaborately ribbed and has bosses decorated with the arms of Scottish noblemen At the west end are the royal stalls with the royal arms. There are fourteen other stalls along the sides of the chapel for the other knights. All the stalls are of oak, elaborately carved The cost of erection was about £40,000, and was borne by the earl of Leven and Melville and his brothers. The late earl had left a sum of money for the restoration of the Chapel Royal at Holyrood. When this was found to be impossible the present chapel was erected It was designed by Sir R. S. Lorimer, R S A.

The Burns Monument and Robert Burns.—"Of all places for a view," says Robert Louis Stevenson, "the Calton Hill is perhaps the best, since you can see the castle, which you lose from the castle; and Arthur's Seat, which you cannot see from Arthur's Seat." On a lower spur of the Calton Hill stands the Burns monument, a Corinthian cyclostyle of twelve columns and a cupola crowned by winged griffins supporting a tripod. This monument was designed in 1830 by Thomas Hamilton. The following is the first stanza of a poem by Burns which might have been written on this spot.

" Edina ! Scotia's darling seat !
All hail thy palaces and towers,
Where once beneath a monarch's feet
Sat Legislation's sovereign powers !
From marking wildly-scatter'd flowers,
As on the banks of Ayr I stray'd,
And singing, lone, the ling'ring hours,
I shelter in thy honour'd shade "

Robert Burns was born January 25, 1759, in a claybuilt cottage raised by his father's own hands on the banks of the Doon, Ayrshire. His father was a gardener and then a farmer. In the *Cotter's Saturday Night* Robert Burns has given to the world a fine picture of domestic devotion in his own home

When Burns was between six and seven years of age he was taught by John Murdock, then a young man of eighteen; his father was careful to give his son the best education

in his power; but from the age of fourteen the boy did the work of a grown ploughman. Burns himself writes "The first two books I read in private and which gave me more pleasure than any I have read since were the *Life of Hannibal* and the *History of the Acts and Deeds of Sir William Wallace* . . the story of Wallace poured a Scottish prejudice into my veins which will boil there till the floodgates of life shut in eternal rest."

Later, Burns wrote the national song, *Scots wha hae wi' Wallace bled*, which stirs the hearts of all true sons of Caledonia from utmost East to utmost West.

But Burns had also a secret school of study He wrote. "In my infant and boyish days, I owed much to an old woman, Jenny Wilson by name. She had, I suppose, the largest collection of tales and songs concerning devils, ghosts, fairies, brownies, witches, warlocks, spunkies, kelpies, elf-candles, dead-lights, wraiths, apparitions, cantraips, giants, enchanted towers, dragons and other trumpery. This cultivated the latent seeds of poesie." These tales gave colour and character to much of Burns' poetry His mother, too, sang to her son old Scottish songs and ballads.

On the death of his father, Robert Burns and his brother took the farm of Mossgiel; their mother superintended the dairy and the household, and Robert and his brother did the rest The poet was now twenty-five years of age. "I began," says Burns, "to be known in the neighbourhood as the maker of rhymes." Love was the voice that called up the poet in Burns. "For my own part," Burns observes, "I never had the least thought or inclination of turning poet till I once got heartily in love, and then rhyme and song were, in a manner, the spontaneous language of my heart." Poetry had now become with Burns a darling pursuit, he had no settled plan of study, for he composed at the plough, at the harrow and with the reaping hook in his hand.

Unfortunately the farm of Mossgiel did not prosper and had to be given up, Burns was reduced wellnigh to beggary. The failure of the farm made him think of emigrating to Jamaica Even food became scanty, and a piece of oatcake and a bottle of twopenny ale made his uncertain dinner when he was correcting the first edition of his immortal works. His best poems are the offspring of the four unfortunate years at Mossgiel. In July 1786 the poems of Burns made their first appearance The heart-warm welcome with which his poems were greeted in his own district fulfilled the hopes of the poet; the poems were everywhere received with eager admiration and delight.

Burns gave up the idea of going to Jamaica and went to Edinburgh. Here the rustic poet was invited to the houses of the great, and cordially welcomed, but after a second visit he saw clearly that he could not hope to get a place of profit and honour from the aristocracy. He obtained a post in the Excise, married his faithful Jean Armour, bade Edinburgh farewell and in 1788 appeared as a farmer at Ellisland near Dumfries. An experienced farmer said to him, "Mr. Burns, you have made a poet's—not a farmer's—choice" At the end of four years Burns had lost all Owing to some rash words he got into disgrace with the Commissioners of Excise; his health gave way under many anxieties, and the Scottish national poet died at the early age of thirty-seven

AN ALPHABET OF ARCHITECTURE

Architecture is the art of building Few remains of Saxon architecture are left, for the Saxons mostly built in wood, but the Normans were great builders of stone churches, and from the eleventh to the fifteenth century the land was dotted with wonderful buildings gradually excelling in ornament and magnificence. It will be found of much service, when visiting old churches and other noted places, to know the names of the various parts illustrated

1. Aisle—the wing or side passage of a church

2. Apse—an arched recess at the east end of the choir of a church

3. Base—the foot, or lower part of a pillar.

4. Battlement—parapet on top of a wall or building, with openings, or embrasures, formerly used by sentries and bowmen.

5. Boss—raised ornament, or knob, placed at the meeting-points of the ribs of a ceiling

6. Buttress—projecting support built on to the outside of a wall.

7. Capital—the head or top part of a column, or pillar.

8. Column—a round pillar

9. Coping—the capping, or covering course of masonry of a wall.

10. Corbel—a projecting stone, or piece of timber, which supports a weight above it

11. Cornice—the level moulding at the top of a wall, generally beneath the eaves.

12. Dome—a large cupola, a structure raised above the roof of large buildings, generally half-circular in shape

13. Foils—the *spaces* between the cusps, or projecting portions of feathered arches.

14. Flying Buttress—an arched buttress built to support certain parts on the outside of a wall

15. Gargoyle—a projecting spout used to throw the water from the gutter of a building off the wall

16. Lantern—a small structure on the top of a dome or in other similar situations to give light and to crown the fabric

17. Moulding—ornamental projections, or cavities, forming the outline of cornices, capitals, bases, etc

18. Niche—a recess in a wall for a statue, vase, or other similar ornament

19. Oylet—a small opening, or loophole, to admit light, or for the discharge of missiles in the walls of fortifications

20. Parapet—a breastwork, or low wall, used to protect the ramparts of military structures, and the gutters, roofs, etc., of churches, houses, and other buildings.

21. Pilaster—a square pillar usually attached to a wall.

22. Pillar—the column supporting an arch

23. Pinnacle—a small turret, usually tapering towards the top, often placed above a buttress

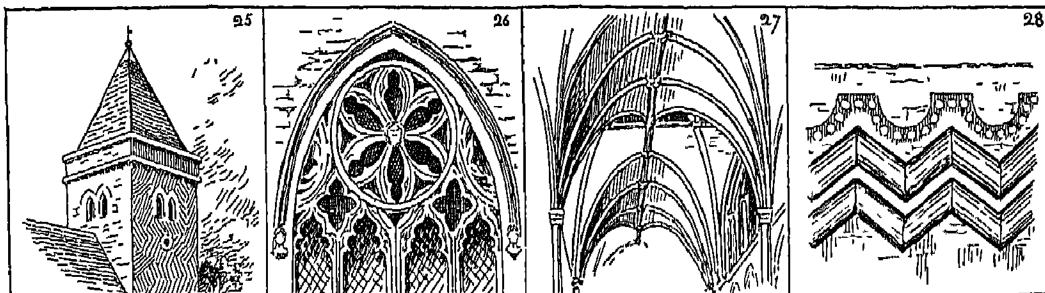
24. Spire—a tower of a church, or building, ending in a point, usually very high.

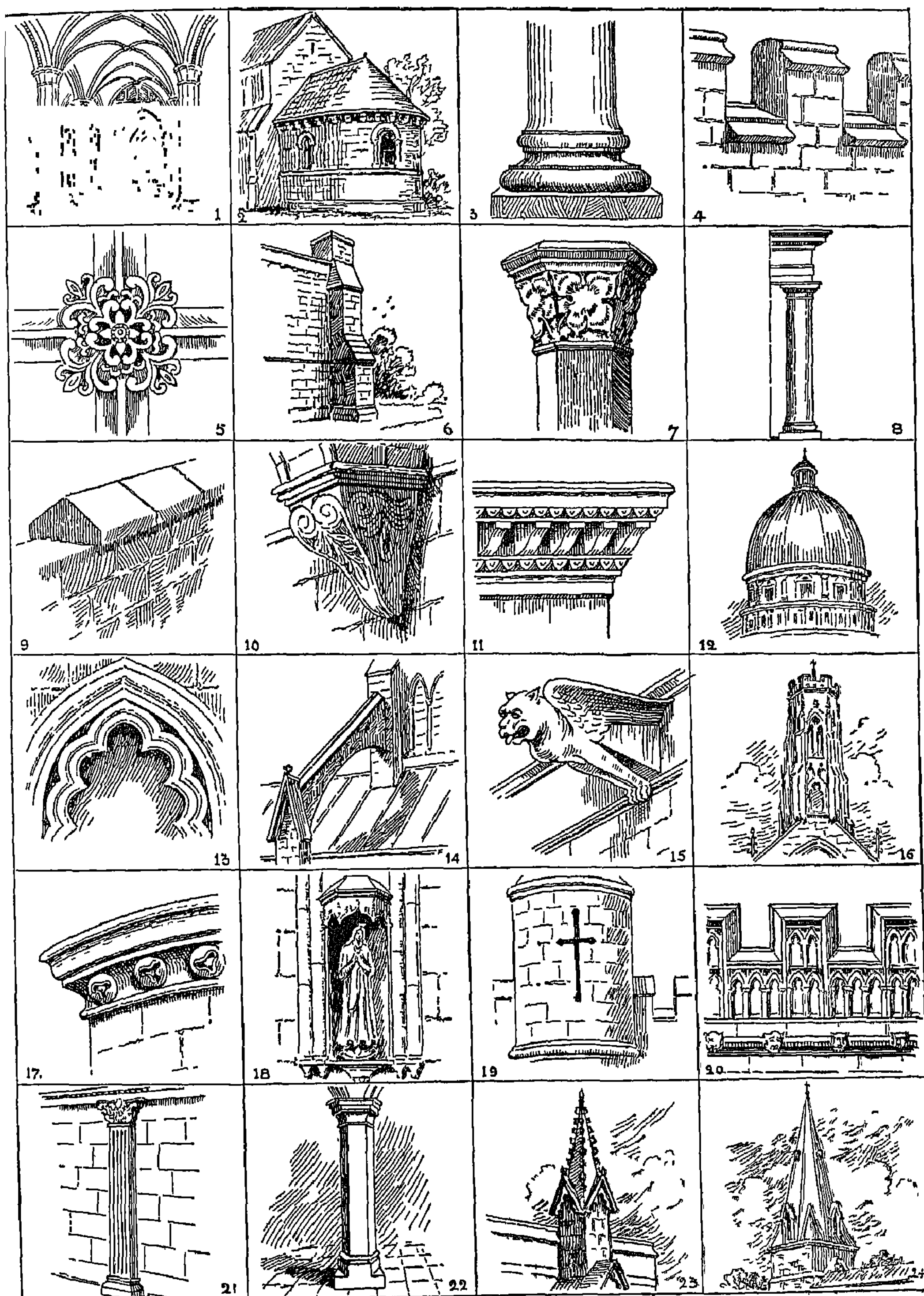
25. Steeple—the tower of a church, or other building, which may include a spire or lantern placed above it.

26. Tracery—ornamental stonework in the upper part of windows.

27. Vaulting—arched roofing

28. Zigzag—a decorated moulding running in zigzag lines, specially used in the early Norman style of architecture





An Alphabet of Architecture

OUR DAILY MEALS AND THE MORNING PAPER

Several of the common foods and beverages in daily use, such as rice, tea, sugar and cocoa, have been already dealt with in other parts of these volumes. The following are brief accounts of further important articles of diet and of the manufacture of paper·

Tapioca.—Tapioca is the product of a South American shrub known as cassava or manioc which grows to a height of six to eight feet, sending out many branches and palmate leaves The fleshy tuberous roots, growing in clusters weighing some twenty pounds, are the valuable portions of the plant. They contain the poison, prussic acid, which fortunately is very volatile and is extracted by grating the roots and then pressing and baking. The starchy residue partially cooked thus becomes the tapioca of commerce which, as puddings or in soups, is a pleasant digestible food.

The cassava plant is now grown extensively throughout the East and West Indies since it yields a large return for a comparatively small amount of labour.

Maize.—Maize is a grain which is very valuable as food. It grows in any country where the weather is warm by day and night during the time that the grain is ripening. It will not grow well in England, however, because though the days are warm the nights are often cold and frosty, and frost kills the young plant.

Maize grows to a height of from six to eight feet. It has long, narrow leaves which may be green, yellow or red When the plant flowers it hangs out at the top of the stem a feathery tassel Underneath this and clustering round the stalk there is a bunch of small flowers. Later these flowers ripen into a mass of seeds tightly packed round the stalk. The whole fruit with the seeds attached to the stalk is termed a cob.

Maize is called corn in America and mealies in South Africa It is the second most important cereal food in the world, the first being rice. The cobs when mature may be roasted and eaten or when young boiled in place of green peas, "corn in the cob" being a notable dish in the U S A. The ripe grain is crushed and made into a kind of porridge and into flat cakes for human consumption, or it is broken and fed to horses and poultry. Finely ground maize is called cornflour. It can be made into nutritious puddings and used for thickening soups. Pipe bowls are made from the centres of ripe maize cobs and the leaf sheaths are used in the making of paper.

Sago.—The sago palm grows in New Guinea, Malay, India and Ceylon. The trees are about thirty feet high and three feet in circumference and the trunks are crowned with a bunch of long feather-shaped leaves and flowering spikes.

To obtain the sago used for food the trees are cut down while they are flowering. The soft inner portion of the trunks, known as pith, is removed and placed in vessels of cold water. It is then beaten and pounded to separate the starch granules from the woody parts. After being washed and strained the meal is dried, and if intended for overseas export it is rubbed into smaller pellets known respectively as "pearl," "medium" and "bullet" sago. Sago is used in the making of light, digestible puddings and in thickening soups.

Pepper.—This useful and common seasoning is produced from the berries of a climbing

plant which is a native of the East Indies. The pepper plant is also cultivated in Malabar, Borneo, Java and Cayenne. It has large, leathery, heart-shaped leaves, wavy stems and small green berries like currants, each containing one tiny brown seed. The berries hang from the branches in long thin bunches and turn a beautiful bright red when they are ripe. The ripe berries are gathered and dried in the sun which turns them black and hard. They are then known as peppercorns and are ground to powder which forms black pepper White pepper is produced by steeping the black peppercorns in lime and water and then removing the dark outer husks by a process of rubbing

Pepper is used daily in the preparation of foods to improve their flavour, and is also sprinkled on food when it is served to make it more tasty and digestible.

Salt.—Salt is obtained in two ways The simplest method is by the evaporation of sea water, when the deposit left is known as "sea" or bay salt In many countries possessing seaboards, where the climate is dry and the summer is long, salt is still made in this way. Portugal, Spain, Italy and France are a few countries having seaboard saltworks. In England and Scotland salt is found in the earth. The "sea" salt industry has therefore fallen into disuse and "rock" or mineral salt is mined. The salt deposits in Cheshire are found from fifty to one hundred and fifty feet thick, and in America and India the salt mines often reach to a depth of many thousand feet. In India, salt is a government monopoly and the duty on salt produces a large share of the Indian revenue

Salt is necessary to most forms of life It is used as a seasoning, in which capacity it is indispensable, making foods pleasant to eat which would otherwise be unpalatable When dissolved in cold water it is useful for softening substances required for cooking, and when dissolved in boiling water it serves to harden them Salted water is also excellent for use as an antiseptic gargle, and is cheap and easily obtained It acts as an emetic when taken in large doses, and benefits the health when applied in the form of baths. It is widely employed in the preservation of meat and butter, forms the foundation of the dyeing industry, and has been successfully used as a manure

Mustard.—Mustard is a herb which grows in Europe, Asia and North Africa There are three kinds common in England—black mustard, wild mustard or charlock, and white mustard The branching plants grow from one foot to three feet high and have lobed leaves, yellow flowers and long rounded seed pods

The mustard bought in tins for household purposes is made from the seeds of the black mustard and white mustard which are ground together, mixed with wheat flour, and coloured yellow with turmeric, the powdered root of an East Indian plant of the ginger family. The whole is then sifted

The addition of a little mustard to many foods not only improves their flavour but also stimulates the appetite and aids digestion. To obtain the full flavour, the mustard powder should be mixed with a little cold water and is best when freshly made A pinch of salt added when mixing prevents the mustard from becoming dry

For medicinal purposes mustard is the best emetic to be taken in cases of poisoning The plants called mustard and cress used in the making of salads are young seedlings of both varieties.

Vinegar.—Vinegar is made from malt, cheap wine and cider by a long process of fermentation or souring. This is done by exposing the liquor to the air in large vats for about six months. A quicker method, however, is usually employed, and for this purpose a vat with three divisions is used. The liquor is placed in the top division, warmed, and allowed to drip through to the second division which contains beech-wood

shavings The shavings have been previously cleansed by washing and steaming, and have then been dried and soured by soaking in hot vinegar for twenty-four hours The liquor from the top division of the vat ferments as it passes through the shavings, and is collected in the lower division as vinegar.

The best vinegar comes from France and is made from white wine Ordinary vinegar may be used as a base for chilli, eschalot and tarragon vinegars, the ingredients from which they take their names being steeped in the vinegar until the desired flavours are obtained Vinegar is used in cookery for pickling and for softening the fibres of tough meat Taken in small quantities it promotes digestion, but taken in excess it is very injurious, as it contains a great deal of acetic acid.

Cloves.—Cloves are the dried, unopened flower buds of the clove tree This tree grows in the Moluccas, Zanzibar, Pemba and in the West India Islands It is a beautiful evergreen standing from twenty to forty feet high, with large oval leaves and clusters of crimson flowers.

The flower buds are picked green and dried in the sun which turns them black and makes them hard so that they resemble nails. From this circumstance they are called cloves. Although the cloves are only about half an inch long they contain a large proportion of aromatic oil, have a fragrant odour and are very hot to the taste

Cloves are used for flavouring puddings, sauces, soups and medicines, and the oil is often employed to relieve toothache.

Honey.—Honey is the thick, sweet yellow liquid manufactured by bees and ants from the contents of the nectaries of flowers. It is intended for the nourishment of the larvae.

The bees collect the nectar in their crops, and when these are full they return to the hive and unload their spoils into a waxen cell or comb which has already been made by themselves Bee keepers encourage the bees to collect much more honey than they need by removing the combs when they are full and replacing them with empty sections. Dry, warm weather is the most favourable for the secretion of nectar by flowers, and consequently large quantities of honey come from New Zealand, Australia, California and South Africa The flavour of the honey depends to some extent on the flowers from which it is gathered When fresh it is a bright straw colour and has a pleasant and delicate flavour and scent Dark honey is considered of inferior quality because it is caused by the bees' collecting the so-called honey-dew which is really the excrement of the green fly or aphis.

Much of the honey sold in jars is diluted by the addition of syrup, flour, gelatin and chalk. Stone or glass jars should be used for the storage of honey, because the honey acts upon the lead glaze of earthenware

Honey is frequently mentioned in the Bible. For forty days and nights John the Baptist lived in the wilderness feeding on locusts and wild honey In India a mixture of honey and milk offered to a guest is considered a mark of respect and esteem. In the East, honey is used for the preservation of fruits and the making of sweetmeats. Cakes, seeds and birds' eggs for transmission to great distances are also often packed in honey. In Palestine, "the land flowing with milk and honey," wild bees are very numerous and the inhabitants sell the produce as a means of earning their livings.

To the ancients honey was of very great importance, being almost the only available source of sugar.

Macaroni.—Macaroni is a starchy food manufactured notably in Italy and France from the hard varieties of wheat grown in regions of dry summers. The wheat is freed from its husks and broken into small rounded grains called semolina which is made into a stiff paste. The paste is placed in a hollow cylindrical vessel perforated at the bottom, and a heavy plate fitting into the cylinder presses the dough through the holes The

holes are of varying sizes The small holes produce solid, cord-like strips called spaghetti, and still finer ones known as vermicelli. While passing through the holes the macaroni, which is tubular, is partially baked It is then cut into lengths and hung over rods to dry in the heat of the sun or of a fire placed under the cylinder. The sun-dried macaroni is considered the best

Macaroni is a wholesome and nutritious article of diet It is the staple food of Italians, and is used in England for making sweet and savoury puddings, and for thickening soups When boiled it becomes soft and swollen but does not lose its shape It is a very useful food because it can be stored for any length of time and is quite cheap

Coffee.—Coffee is the beverage made from the roasted and ground seeds of an evergreen tree or shrub Coffee trees are grown from seeds germinated in nurseries, and the young plants are set out in the open when they are from two to nine feet high. They require a hot, moist climate, and during their early growth need to be protected from drought and too fierce a sun. The plants have opposite leaves, from the bases of which spring funnel-shaped flowers. The fruits are soft and somewhat resemble cherries in appearance. Inside each fruit and surrounded with pulp are two seeds, rounded on one side and flat on the other. These seeds are called coffee beans The trees are ready to bear when they are three years old, and the berries when ripe are either shaken down or gathered by hand

The coffee sold for commercial purposes is prepared by one of two methods, either by the old method in which the berries are dried and beaten until the beans are set free, or by the web method, in which the ripe fruit is soaked and then torn apart in a pulping machine The freed beans are left to ferment for a short time until the sticky pulp around them falls off. They are then washed, dried and sorted The colour of the beans and not the size decides their quality. South American coffee beans have a green tint in them, but other varieties are yellow.

Most of the world's coffee is grown in Brazil, but hundreds of bags of coffee beans are also exported from East Africa, Arabia, India, the East and West Indies Little is now grown in Ceylon.

Coffee beans roasted and ground were first used in the preparation of a drink in Abyssinia, whence the custom spread to Arabia Coffee drinking was afterwards taken up in Turkey, and became common in England in the eighteenth century. The beverage has always been more popular on the Continent than in England, however, where tea is generally preferred.

Coffee is a refreshing and stimulating drink, and when taken with milk and sugar is very beneficial Black coffee is sometimes used as a medicine to counteract the effect of opium and alcoholic poisoning.

The morning paper.—Paper is a substance made of the interlaced fibres of rags, straw, wood and other materials. The oldest forms of paper used were leaves, the inside bark of trees, and parchment manufactured from the skins of animals The Chinese are supposed to have been the first people who made large sheets of paper from soft masses of vegetable fibres, and the Egyptians later discovered how to make paper from the papyrus reed, the fibres of which were washed, interlaced and beaten into smooth sheets The modern word paper is derived from papyrus.

To-day the raw materials used in the paper making industry are (*a*) old cotton and linen rags, (*b*) useless remains of newly woven stuffs from the textile trades, (*c*) crops of plants, including straw and flax primarily grown for other purposes, (*d*) plants such as esparto grass, pine, fir and spruce trees especially suited to paper making, and (*e*) old paper treated and made up a second time

The best paper is made from cotton and linen rags whose fibres are very durable.

Newspaper does not need to have this quality, however, and it is manufactured from wood pulp, the cheapest paper making material obtainable to-day. Pulp making is an important industry in North America, Newfoundland and Scandinavia, where pine, fir and spruce forests are abundant The logs from these trees are held by machinery against revolving grinding stones over which water washes continuously, mixing with the ground wood and turning it into pulp The pulp mills of Canada and Newfoundland stand close to the forests and on the banks of streams Newspaper is usually made up of about 70 per cent of wood pulp, and consequently when left lying in the air and sunlight it will quickly turn yellow and brittle

Most of the paper made in these days is manufactured by machinery, the paper machine being one of the most wonderful inventions of modern times The wood pulp is imported in the form of large, stiff boards. Before it is ready for the paper making machine it has to go through a process of preparation called beating, in which the pulp is soaked in water and placed in the beating engine, resembling an oval tank. Here the pulp is turned continuously round and under a heavy metal roller fitted with steel bars, and the fibres are squeezed, drawn out and cut. Certain materials such as China clay, dyes and starch are added to the mixture, and when the beating process is finished the material is lightly drained and bleached. It now has the appearance of a smooth, milky fluid and is ready for the paper machine.

The paper machine manufactures a long, continuous roll of paper The white fluid is poured in at one end and flows on to a travelling wire cloth which swings to and fro to interlock the fibres, and through which the surplus water drains away. From the wire cloth the material is carried on to a felt-covered roller and then passed between very heavy revolving presses, from which it emerges as a damp but smooth and even sheet of paper It runs on over steam-heated rollers, which dry it thoroughly, to a final roller, which gives it the required glaze. In its finished condition the paper is either wound by machinery on to great spools or cut into sheets.

The freshly manufactured paper is required in reels for newspaper production At the printing factory the paper is unwound into a machine and passes between pairs of rollers which print the daily news and pictures upon it. Emerging from these it is folded and cut by machinery and turned out ready for sale. A modern newspaper machine will complete in one hour 60,000 copies of the news, all printed, folded and numbered in quires or packets of twenty-six

CREATURES OF THE FROZEN SEAS

Whale.—This name is given to a group of large, fishlike, marine animals which have lost their coats of hair and are fitted in this and other ways for life in the ocean. The only vestiges of hair remaining to them grow around their lips, and are most evident in young whales To compensate for this loss of hair and to maintain the necessary warmth of the blood, whales are provided with a thick layer of blubber or fat underneath their smooth skins. They breathe the fresh air above the sea, and for breathing purposes possess a blow-hole or nostril on the top of the head. In order to breathe they rise periodically to the surface of the sea. The blowing or spouting of the whale is caused by the emission of warm air from its lungs when breathing, and this hot breath the cold outside atmosphere condenses into steam. The anatomy of a whale in no way resembles that of a fish The whale has warm blood, fills its lungs with air by respiration, gives birth to young animals instead of laying eggs, and nourishes its offspring with milk A whale has no neck, the head being joined to the body, nor has it any outward signs of ears Its front limbs have the form of paddles, and are used principally for maintaining the balance of

the body and for steering Its back limbs have been transformed into a great tail with two horizontal flukes composed of blubber and an outgrowth of skin. The tail fin of a fish is always vertical, but that of a whale is horizontal, to assist it in rising rapidly to the top of the water for air.

There are two main groups of whales—those that are toothed and those possessing whalebone, a horny, flexible substance which grows in thin layers set side by side in the top jaw. The latter are the right whales, and in the former group are placed the sperm whale, narwhal, porpoise and dolphin. Whales are flesh-eating animals, feeding mainly on mussels, jelly fish, oysters, winkles, limpets, cuttle fish, shrimps and small crabs Some of the smaller whales eat fish, and the grampus kills and devours seals Whales are hunted for their oil, whalebone, spermaceti (the white, fatty material of which candles and ointments are made) and ambergris, a scented, waxlike substance used in perfumery.



RIGHT WHALE

The *sperm whale* or cachalot is a very large and valuable animal, frequently sixty feet long, and found in schools or companies of a hundred or more in the warm seas. Nearly half of the body is taken up by the enormous rectangular head, the lower jaw of which contains about twenty ivory teeth The best whale oil on the market is extracted from the blubber of the cachalot, the head supplies from eight to ten barrels of spermaceti, and ambergris comes from the intestines America controls most of the sperm whale "fishery" of the world



CACHALOT OR SPERM WHALE

The *bottle-nosed whale*, also toothed, has an upright forehead and short beak which resemble on the surface of the ocean a floating bottle. This whale prefers temperate seas and is sometimes seen around the British Isles It is about thirty feet long, brown above and whitish below the body, and is valuable for its oil and spermaceti. From a fair-sized bottle-nosed whale two tons of oil and as many cwts of spermaceti may be extracted Its skin is suitable for leather

Off Canada and Labrador the *Beluga* or *white whale*, also toothed, is hunted, and occasionally it is seen near the coast of Scotland This animal is really a large dolphin, and generally measures about twelve feet in length Its skin is sold under the name of "porpoise-hide," and oil is made from its blubber.

In the seas around the Orkneys and Shetlands are caught *pilot whales*, also called *caalings* and *blackfish* These are round headed, black dolphins about twenty feet long with patches of white on the chest They swim in schools behind a pilot or leader, and should the leader become stranded on the shore at ebb-tide, all the others are caught in the same way The flesh of the pilot whale is salted for food and its blubber yields supplies of oil.

The *grampus* is a large, fierce dolphin about twenty feet in length, found in all seas and sometimes even in the Thames estuary It devours fish and seals, and will fight a whale.

The *narwhal* lives in the Arctic Ocean and is, properly speaking, a porpoise The male of the species has a long, sharp, ivory tusk protruding from the jaw, and for this and for its oil it is hunted.

The common *porpoise* is black above and whitish below the body, and six or seven feet long It looks like a small whale, but has a more receding head. Schools of porpoises are often seen leaping about in the water off the coasts of Britain and America,

and frequently they swim up the largest rivers and devour the fish They are destructive during the herring fishery season In medieval times their flesh was eaten, but nowadays they are killed for their oil

The best known of the whalebone or right whales is the *Greenland whale*, remarkable for its enormous head and finless back It has a curved mouth containing long plates of whalebone with fringed edges which act as strainers to capture and keep the small fish, crustaceans and molluscs on which it lives The species has become rare through over-hunting, although at one time it was found in great schools close to the ice-edge of the Arctic regions. Whalebone was greatly in demand in the eighteenth century for the curving and supporting of ladies' dresses, and this accounted for the incessant hunting of the Greenland whale

Rorquals are right whales of slighter build than most other members of the Cetacean order. They have smallish heads and short back fins. They carry as many as three hundred fibrous whalebone plates on each side of the upper jaw In the throat is a great pouch for the storing of the fish on which the rorqual lives, and, when this pouch is empty, the underskin of the mouth and throat contracts into long folds. The male rorqual is smaller than the female

Four kinds of rorquals are hunted near the British Isles, and of these the fin-whale is the most ordinary species. It feeds mainly on herrings and is fifty or sixty feet long Sibbald's rorqual is the largest whale in existence, and specimens of this whale eighty-five feet long have been caught. An enormous supply of oil is extracted from the blubber of rorquals. The whalebone and oil obtained from the fin-whales, however, are not of the best quality

Whaling is practised in the Antarctic Ocean, and off Iceland, the Faroes, the Shetlands and Newfoundland. The fin-whales are most largely hunted, and are captured by the harpoon, a kind of barbed spear to which very stout rope is attached In past days the harpoon was thrown by hand, but now it is bomb-nosed and is fired into the whale from a gun.

Walrus.—This is the name given to a group of large, long-tusked animals related to the seal and sea lion. The walrus inhabits arctic regions, living partly on land and partly in the sea. It has fins in place of feet and feeds mainly on double-shelled molluscs such as mussels and oysters. It has a huge, heavy body, an adult male often weighing three thousand pounds, and measuring ten or twelve feet in length There are no ears visible on the outside of the head The twelve or fourteen inch tusks develop from the upper jaw when the animal is fully grown, and are used for attacking purposes and for scooping out molluscs embedded in the sea floor. The body of the young walrus is clothed in yellowish-brown fur which afterwards disappears.

Different breeds of the walrus are found in the Atlantic and Pacific oceans. The walrus of the former ocean lives on islands off the far north of Europe and around Baffin bay in America, and has also at rare intervals been seen near Scottish coasts. The walrus of the Pacific ocean lives near Alaska and north-eastern Siberia The numbers of the animals have seriously diminished owing to continual hunting

Seal.—The seal is a marine animal which lives partly on land and partly in the sea, and has limbs modified to be of use for swimming Its hands and feet are fully clawed and webbed, and its long body, clothed with coarse hair, tapers towards the tail. The seal uses its limbs in the sea as propellers. Its feet are actually joined to its tail and unable to assist movement upon land, and it has no ears visible outside. Its eyes are adapted for the twilight of the deeps, and it has very sensitive whiskers. In the water the seal is a lively, agile animal, able to swim ten or twelve miles in an hour It is fond of lying out to rest, however, on rocks by the water's edge, and drags itself slowly over the ground in heavy jerks by

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throwing its weight forward on its front flippers The young are born on land, usually one at a time Seals inhabit all excepting tropical seas, but are found in the greatest numbers in Arctic and Antarctic areas Their food consists of fish, mussels, oysters, snails, shrimps, crabs and sometimes birds. They are valuable for their skins and for the oil extracted from their fat The order is divided into three groups—the true seals, the sea lions and the walruses

Many different kinds of true seals are seen off the shores of the British Isles, and the common seal has its home in these waters. It is greyish-yellow in colour, blotched with brown, and measures four or five feet in length It will frequent the mouth of a river stocked with salmon, and hunt the fish far up the stream, devouring them wholesale Its teeth turn inwards, thus enabling it to grip firmly its slippery prey It is an inquisitive creature, and will swim quite close to boats and to the shore in order to observe human beings. The young of the common seal are born on land about June They are dark and spotted, and take to water in a very few days, sleeping on land in between short swims. They are suckled by their mothers, who show much care and affection

The harp or Greenland seal is hunted off Newfoundland. It is larger than the common seal and has a lighter coat and a black face. The ringed seal, which has white circles on its back, is hunted by the Eskimos, and provides them with food and clothing It constructs shelters for itself on the ice, and these may have been copied by the Eskimos in their hut-building, for the resemblance is marked. The great grey seal which lives in the Atlantic ocean is eight feet long. Its young are white and less robust than the young of the common seal, for they remain lying on land until they are a month old, sleeping by their mothers and being suckled by them. The hooded, or bladder-nosed, seal, found in Icelandic waters, has a grey skin and a bag or hood twelve inches long on its face It can distend this hood with air whenever it wishes to frighten its enemies. One kind of seal only is found in the Mediterranean sea and the Indian ocean. This is the large sea elephant, with a nose elongated into a short trunk A fully grown elephant seal may measure as much as twenty feet in length and also in girth

Different kinds of sea lions or fur seals are found in the South Pacific, in the Bering sea, and off Alaska and Labrador Unlike the true seal the sea lion has a pointed nose with nostrils at the end instead of on top, small ears, some suggestion of a neck, back flippers unattached to the tail and a thick fur beneath its long, coarse hair. Because of its free hind limbs it can move more rapidly over land than a seal, and consequently does not spend so much time in the water Until they are six years old the young males and females lie out in hundreds on "hauling grounds" at some distance from the "rookeries," or breeding grounds. During the mating season, which lasts about three months, the adult male sea lions eat no food. They herd together with the females, and savage fights often occur between the bulls A well-grown male sea lion measures about seven feet in length, and is provided with a thick layer of blubber round the neck and chest. The Labrador sea lions supply the valuable furred sealskin from which women's coats are made. Off California black sea lions are hunted and these animals are often shown as performing seals in menageries.

Seal-fishing in Newfoundland.—Every spring a little fleet of ships sets out from St. John's, the capital of Newfoundland, on its way to hunt for seals. Some of the ships are made of wood and some are made of steel All are strongly built, and the front of each ship is strengthened with iron so that it can break its way through the ice of the cold northern seas.

Each ship has a crew of about two hundred and fifty men. They must all be strong and hardy, for no weakling could do the hard work which the seal hunter has to do. These

sealers all wear quantities of thick clothing, and leather or sealskin caps and boots to keep out the bitter cold Their food while on the ship is fish, pork, bread, potatoes and vegetables, with tea to drink. Three days in the week—Sunday, Tuesday and Thursday—are called Solomon Goss's birthdays, though no one knows why, and on these days the crew have "duff," or plum pudding, for dinner. Later, when they have caught some seals, they will eat seal meat, which is very good and tastes like mutton

So long as the sea is not frozen, all is well, and the ships sail merrily along The dangers of the voyage begin when the fleet meets ice. The ice lies all around the ships in solid floes or sheets, which are always moving and grinding against the ships' sides. If the ships were not so strongly built they would be crushed in. As it is, a ship sometimes gets nipped between two ice-floes and held fast. When this happens, the crew go down on the ice and break it up with pickaxes, or blow up large pieces of it with dynamite This usually sets the ship free, and she is able to sail on.

Presently seals are sighted Perhaps it is the lookout man who sees them first from where he is perched on the mast Perhaps one of the aeroplanes circling round may send down a message, "Seals ahead!" At once the ship steams towards the spot, and everyone on board sets to work to get ready for the seal-hunt As soon as the ship reaches the ice floes where the seals and their little ones are playing, the crew swarm down on to the ice ready to begin the hunt at once Each man carries a rope wound round him, a wooden club called a "bat," a knife, a tin of water and a little bag of food. Once on the ice, the sealers begin to kill the seals, clubbing them with the bats, skinning them with the help of their knives, and then dragging the skins by means of the rope to a place where a flag has been stuck in the snow. When the hunt is over, the ship steams from one of these flags to another, and the men collect the piles of skins and stow them away inside the ship.

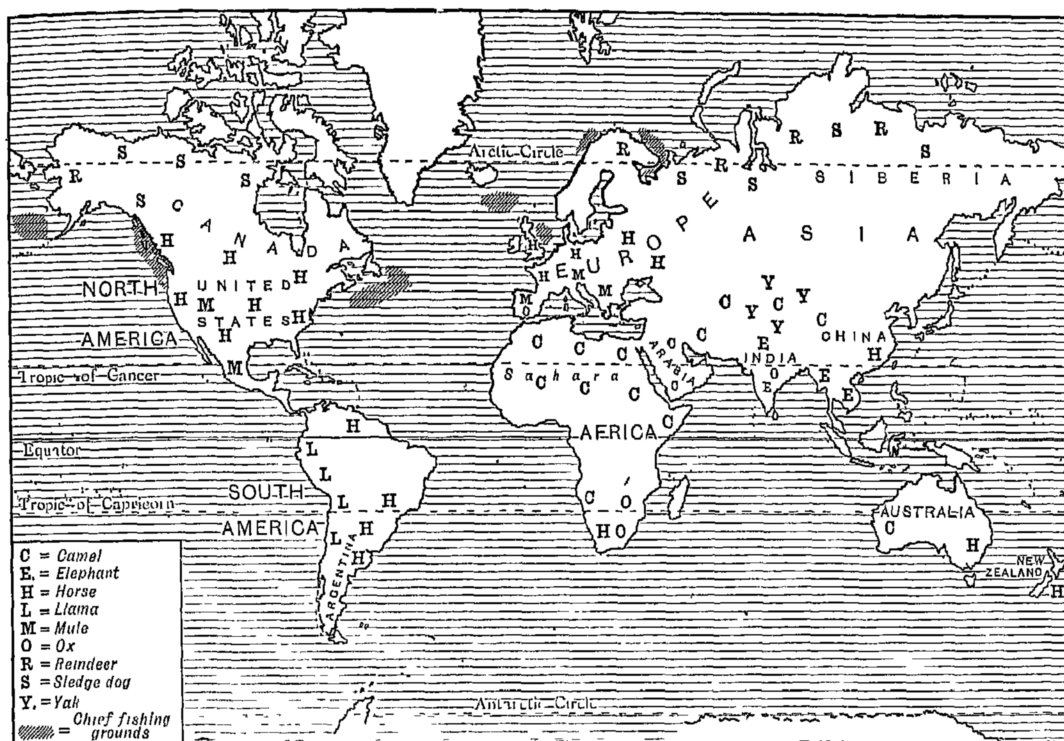
Sealing is hard and dangerous work, for the ice is moving and cracking all the time, and the men often have to jump across these cracks, dragging the skins behind them. Sometimes a man misses his footing and falls down a crack into the icy water When he has been hauled out, cold as it is, he must strip off all his clothes and wring them dry, or they would freeze upon him as stiff as boards Sometimes sealers are seized by snow blindness They cannot see, and suffer terrible pain. At other times, a thick fog or a snowstorm may come on and the men cannot find their way back to the ships, and so perish of cold. Yet in spite of all difficulties and dangers, every year thousands of men go seal-hunting in the far north

At last the ships are loaded with sealskins, and they set out for home once more. What a welcome they get when they steam safely into St. John's harbour! The crews unload the skins, and get their pay, then off they go to their homes to live quietly there and grow vegetables or hunt or fish till next year's sealing time comes round

Meanwhile, all the fat is scraped off the sealskins and made into oil, which is sent away to be used in the manufacture of soap. The skins themselves are tanned and then made into leather goods Next time you see a purse or a pocket book made from the skin of a seal think of the sealers who went into the frozen North and risked their lives on the ice to get that skin and bring it home.

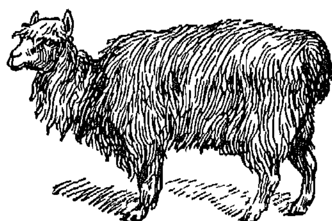
TRANSPORT ANIMALS OF THE WORLD

Llama (Peru).—The name Llama is given to certain members of the camel family found only in South America, and living mainly in the mountainous districts of the south and west from Peru to Patagonia. Among the wild species are included the guanaco, the vicuña and the alpaca. The llama is a domesticated breed of the guanaco It is smaller than the camel, more delicately built and without a hump. It has a short tail and long, woolly hair It is reared for



HOMES OF TRANSPORT ANIMALS OF THE WORLD

its milk and wool, and is also valuable as a beast of burden and a mount for riders. Like the cow, it chews the cud. In colour it is white, and its face resembles that of a camel,



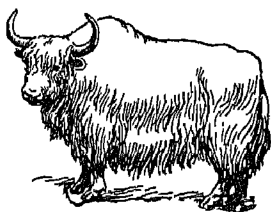
LLAMA

but it has long pointed ears placed high up on the forehead

The wild llamas, or guanacos, live in herds among the mountains and are very shy of approach Once caught, however, they are quickly tamed A fine animal may measure over four feet to the shoulder Strangely enough, when they are dying, guanacos journey to special "burying places" of their own, and the ground in these spots is strewn with their bones

Yak (Tibet).—The yak is the Tibetan ox, and is found both wild and domesticated in Tibet and in parts of China It is hoofed and humped, and makes a grunting noise. Long hair, often trailing to the ground, grows from its tail and limbs and the under-parts of its body The wild yak has dark brown hair Domesticated bulls are fine creatures, sometimes standing six feet high at the shoulders, and bearing great smooth horns, hollow inside and curving upwards to sharp points

Yaks are solid, heavy animals, with long, narrow faces and short legs, and they often weigh over a thousand pounds. They live in high mountainous areas, and cannot endure hot weather. The Tibetans rear them for their meat, and they are also excellent beasts of burden in rugged and dangerous districts.

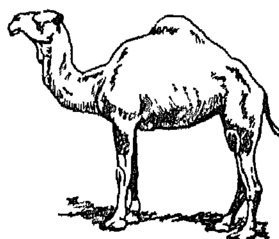


YAK

Camel (Africa, Central Asia, Western Australia).—The camel is the beast of burden used for travelling in hot, sandy countries such as Egypt. It is often called the "Ship of the Desert," and is specially fitted by nature to live in dry areas. It is a tall, long-necked, humped animal. The dromedary or African camel has one hump, and the Bactrian or Asiatic camel has two humps. Reserves of food are stored in the hump, and when this is large and solid, the animal is well nourished When, however, the hump appears shrunken, the camel is half starved. It has two toes on each foot and a large pad beneath them for aid in walking on loose sand Water is stored in pouches in the stomach, so that the camel can travel three or more days without drinking. About four miles an hour is the usual speed of a baggage camel, but riding breeds can travel at the rate of ten miles an hour.

The camel is covered with short, coarse hair It has a heavy rail of eyelashes to keep out the sand and protect its eyes from the sun, and it can close its nostrils to shut out the sand during sandstorms. It has a hard mouth, and can eat prickly plants that sometimes grow in the sand among the rocks The camels in a caravan are fed on dried dates and generally treated very kindly by their masters. Cheese is made from the milk of camels, and cloth for carpets and tents is woven from their hair, which is also used for artists' brushes. The Arabs eat the flesh of the camel and value its milk very highly.

The Imperial Camel Corps, consisting of native troops mounted on camels, won great fame for services in Africa during the First World War and for police work in guarding desert peoples against raiders. To-day, despite the widespread use of "tracked" motor vehicles and aircraft, their work is still invaluable among the shifting sands.



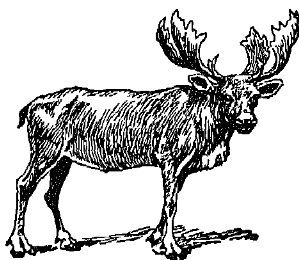
CAMEL

The Reindeer (Lapland, Alaska).—The reindeer is the only breed of deer that has ever been domesticated with success. It is found in subarctic regions and has a heavy, shaggy body between four and five feet high at the shoulder. Its coat is generally brown, with white patches on the neck and sides, though many domesticated reindeer are grey or white in colour. Both the male and female carry antlers rising from the forehead The antlers are very long and curved, and are branched in several places. A reindeer's feet are wide and fitted for travelling over snow in winter and marshy land in summer. Wild reindeer spend their summers in grassy valleys, and go up the mountain sides in the winter, keeping themselves alive on lichens and moss from which they scratch away the snow with their feet.

The reindeer has been reared for hundreds of years by the people of Lapland, who keep large herds for their milk, flesh and hides, and also use them as beasts of burden In countries that are snowbound during the winter, sledges drawn by reindeer or dogs

are the common means of transport The sledges are light carriages fitted with runners to move easily over the snow

The American reindeer is called the *caribou*, and is found wild in forest districts and Arctic regions of Canada. Bones of reindeer found in the Thames valley date back to the Ice Age



REINDEER

Sledge Dog (Arctic shores of America and Asia).—The Eskimos of Greenland and Arctic America breed dogs to draw their sledges. The Eskimo dogs are similar to wolves, and very often a female dog is tied up in the forest to be mated with a wild wolf, so that the strength and hardiness of the breed and its wolfish characteristics should be maintained The dogs have rough coats, sharp noses, upright ears and bushy tails Most of them are grey in colour like wolves, but some are black and white, and, also like wolves, they all howl instead of barking A curious difference between an Eskimo dog and a wolf is that the pupils of the dog's eyes are round, whereas those of the wolf are slanting.

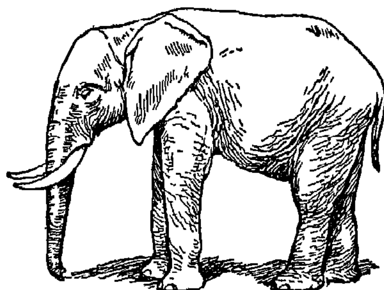
The dogs are fed on frozen fish and they swallow snow for drink. In the spring they hunt out birds and eggs to eat. As a rule, eight dogs yoked together draw a sledge, and under ordinary circumstances a dog will travel over thirty miles in a day, dragging a load of as much as three hundred pounds (In *Holland* and *Belgium* dogs are used for drawing the milk carts and other small, light vehicles laden with goods They are a medium sized kreed with shaggy coats)

Elephant (India).—The elephant is the largest living land animal. It is a huge, four-footed, thick-skinned creature with a long, flexible trunk in place of a nose, and curved ivory tusks. The elephant uses its trunk for lifting food to its mouth, and through it sucks up water which it squirts down its throat.

There are two breeds of elephants—the African and the Asiatic The Indian elephant, belonging to the latter breed, has a huge, rounded head and small ears. It is generally of a dark grey colour, and sometimes shows white markings. It grows to a height of about eight or nine feet at the shoulder When kept captive it has lived for over a hundred years, and in the wild state probably lives much longer The heavy body of the elephant is covered with a tough, wrinkled skin. Its knees are not so high up as those of other hoofed animals and consequently when it lies down it bends its hind legs and stretches out its forelegs in front.

Although it possesses such a great head, the elephant has a small brain because of the thickness of its skull, which has to support its large jaws and heavy trunk

The elephant feeds on grass and the shoots and leaves of trees. When it cannot reach the branches, it will often push a tree over by pressing on the trunk with its head and using its tusks as levers. The Indian elephant is trained as a beast of burden, and is very useful for timber stacking It takes great care of its trunk, which is very sensitive,

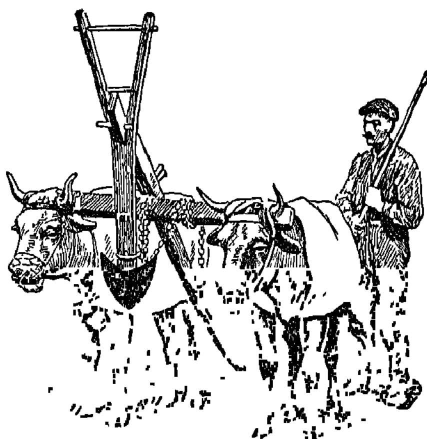


AFRICAN ELEPHANT

and rests the logs on its tusks or grasps them with its teeth, using its trunk to steady them.

Ox (South Africa, India, Spain).—The ox is a cloven hoofed animal of the same family as the buffalo, bison and yak. All these creatures have hollow horns, thus differing from deer which have solid antlers The ox ruminates or chews the cud. Its stomach is divided into four sections, and the hastily swallowed food is stored in the first cavity until it can be cast up again and chewed at leisure. Afterwards it is passed down to the other cavities in turn.

Excepting for the bison of North America, all oxen are natives of the East. They are reared for their meat and hides, and also used for drawing loads and for ploughing. A great deal of traffic in India is carried on by means of ox carts. These are light vehicles, generally made of bamboo, with large and wide-rimmed wheels The humped Indian oxen which draw them are cream coloured, with erect horns and mild, patient eyes. They are driven by single reins passed through their nostrils or fastened to rings through their noses, and as they walk they press against the wooden yoke fixed to the pole of the cart. Western cattle are not humped as the eastern breeds are. The humps are storing places for fat with which the animals are nourished when pasture is scarce



Oxen with Plough (Spain)

Ass.—The ass belongs to the horse family, other members of which are the zebra and the quagga. It differs from the horse in having a bristling mane, long ears and a tuft at the end of the tail. It is not so freely striped as the zebra, generally possessing only a line down the back and over the shoulders, though sometimes it has striped legs. Wild breeds are found in Asia and Africa, and the domestic ass has been reared from the wild African variety. Its hardy nature, docility, powers of labour and ability to live on the roughest herbage make it very useful as the poor man's beast of burden especially in semi-arid regions, and though most European types are small owing to neglect the white ass of the oases of the Near East is a fine sturdy beast.

The ass is popularly regarded as a stupid and obstinate animal, but this is not rightly the case. When well-treated it has proved to be a highly intelligent creature. A mule is a cross between a jack-ass and a mare, and the fine Spanish and French he-asses suitable for breeding purposes often fetch a price of £200 and more The milk of the ass is nourishing for invalids, its flesh is eaten in many lands and its hide also is valuable to man.

Mule (Mexico, Central and Southern Europe).—The offspring of a male ass and a mare is called a mule. It is a large animal with long ears, small hoofs and an asslike nature. Often its tail is inclined to be tufted. A fine mule stands almost as high as a horse and is nearly equal to it in strength.

The mule is a very useful beast of burden in rugged, mountainous districts, because it is not so delicate as a horse, and thus less likely to contract disease. It does not require such careful feeding as a horse, lives longer, has greater staying power and is remarkably sure-footed. As in the case of the ass, it is not a stubborn animal when kindly treated, but very quiet and tractable. It is capable of work by the time that it is four years old, and is good for service for ten or eleven years

TRANSPORT THROUGH THE AGES

The pictures on the next page show the story of the progress through the centuries of the means of transporting, or carrying, goods and water After the Romans finally left Britain their great military roads were neglected, and all through the Middle Ages very little was done to mend them. The religious houses were expected to keep up the roads in their own neighbourhood, and, after the dissolution of the monasteries in the seventeenth century, the work fell on the parishes, but the work was done in a casual manner. In 1754, by the passing of the Turnpike Act, companies were formed to look after the roads, and tollgates were set across them at certain distances apart for the collection of tolls of different amounts, the money being used for repairing the roads Most main roads were improved, but the art of constructing solid roads was not known till the beginning of the nineteenth century In 1815 John McAdam, a Scottish engineer, introduced the method of making roads with arched surfaces composed of small shaped stones. Tar-macadam and reinforced motor roads traverse the country

1. An eleventh-century Saxon cart drawn by oxen, driven with a long sharp-pointed stick called a goad The frame of wood joining the oxen at the neck is a yoke.

2. A fourteenth-century horse-drawn cart It was not usual in those days for people to ride in carts, mostly they walked, or rode on horses.

3. Strings of pack horses and mules remained in use in Great Britain till the nineteenth century Much of the important woollen trade of the eighteenth century had to be carried on by means of pack horses, as the rutted ill-kept roads were impossible for heavy traffic

4. A lumbering wagon of the seventeenth and eighteenth centuries. The number of horses required and the width of the wheels give a good idea of the state of the roads

5. A donkey with panniers. A pannier is really a bread basket, from the Latin *panis*—bread.

6. An old London seventeenth-century street crier, who sold water from the New River This waterway was constructed by Sir Hugh Middleton in 1609-13, and is now controlled by the Metropolitan Water Board

7. Modern means of conveying water—pipes of the Birmingham supply carried across the Stour Valley.

8. A canal boat (now motor driven) used for the transport of heavy goods, such as coal, pig iron, bricks, etc John Brindley, the great engineer, joined Manchester and Liverpool by a canal in 1767, the success of his experiment led to the general introduction of water-carrying, and Great Britain was afterwards traversed by 3,000 miles of navigable canals.

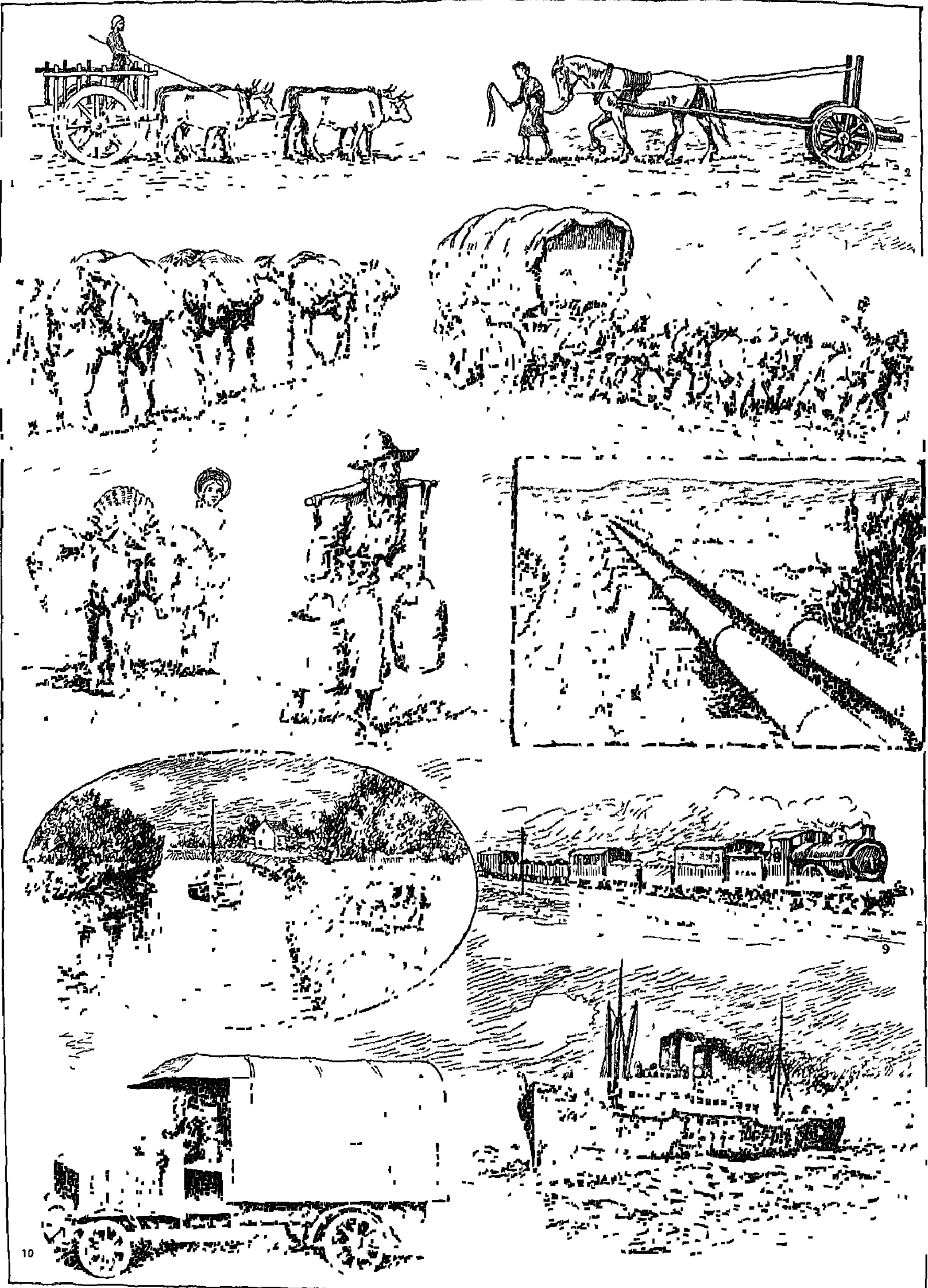
9. A modern goods train George Stephenson invented a locomotive (travelling) steam engine in 1814, and in 1830 his famous "Rocket" travelled at thirty-five miles an hour between Liverpool and Manchester. Modern express trains now travel at over sixty miles an hour.

10. A modern motor lorry In 1803-4 Richard Trevithick ran a steam coach on the London streets, one hundred and three years before the motor bus, as we know it to-day, came into use

11. A modern Atlantic liner built of steel for transporting goods, mails, and passengers thousands of miles across the ocean The first steamships took fourteen days to cross the Atlantic, while modern "ocean greyhounds" now cross from Liverpool to New York in less than five days

BRIDGES THROUGH THE AGES

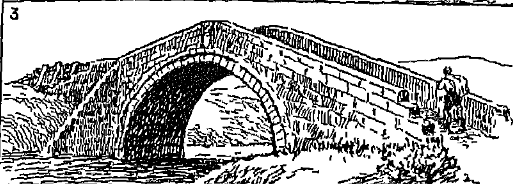
1. The building of bridges has had a great influence on the growth of towns and villages Roads from the surrounding countryside would naturally converge on a river crossing, and near by would arise a market for the sale and exchange of goods, sheep,



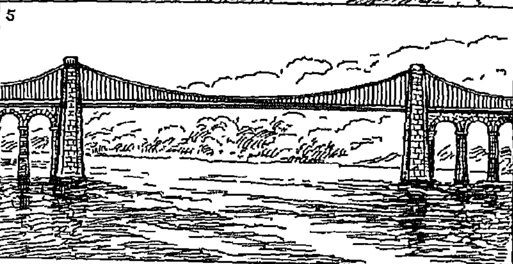
Transport through the Ages



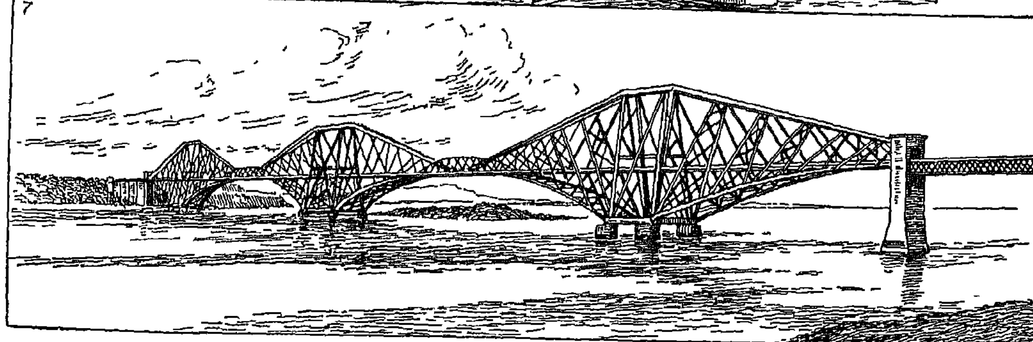












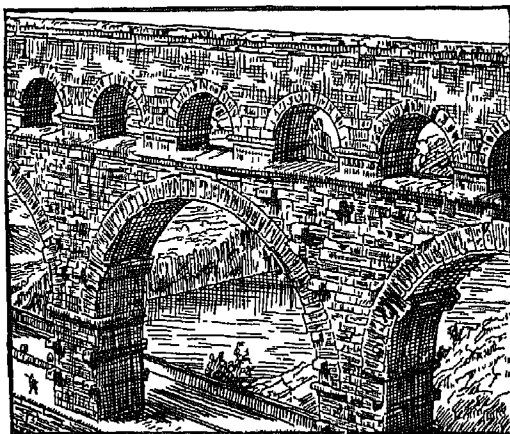


BRIDGES THROUGH THE AGES

cattle, poultry, etc No one can say who built the first bridge. A fallen tree trunk across a stream was undoubtedly one of the first, and stepping-stones, in shallow parts of a stream, must have been very useful

2. One day some clever man built high heaps of stone in a line across a stream, and on the top of these he placed slabs of slate, stone, or wood. Such bridges as these are still to be seen on Dartmoor.

2a. The Romans were the first to build bridges with arches like that shown below So well was their work done that some are still found in different parts of the country. *But after the Romans left, little was done* in bridge building until Norman times.



2a

3. A bridge over the Esk at Danby, Cleveland, built late in the fourteenth century by Neville, Lord Latimer, whose arms are carved on it. It was customary to make the arches of the early bridges very high, so that the roadway sloped sharply up on one side and sharply down on the other. Sums of money were often left for the repair of bridges; Roger Thornton, a rich merchant of Newcastle, in 1429 left one hundred marks for the repairing of the Tyne bridge in that town In the country, bridges were sometimes built and kept up at the public expense by taxes, fords were extensively used; bridges were sometimes built by certain noblemen or by monasteries. Bridges frequently had gateway towers on them to protect the passage, and the room over the gateway was often a chapel Wayside chapels for pilgrims, the chief travellers in the Middle Ages, were common on bridges.

3a. A picture of Elvet Bridge, first built by Bishop Hugh of Puiset, *c* 1170—Norman times. It was afterwards rebuilt by Bishop Fox, *c* 1500, with Tudor houses and shops on it. One of the most interesting of all English bridges was Old London Bridge, shown at the bottom of the plate The bridge itself was built 1176-1209. From *time to time large buildings and houses* were erected on it There were the Bridge Chapel, dedicated to St Thomas of Canterbury, the waterworks, cornmills, a draw-bridge tower and many shops Southwark, or Traitors' Gate, over which traitors' heads were placed on poles, was built at the end of the sixteenth century. These wooden structures suffered greatly from fires, but the old bridge itself existed until the beginning of the nineteenth century.



3a

4. A pontoon bridge of flat-bottomed boats, such as is used by the military for crossing rivers

5. Great progress was made in bridge building with the introduction of coal for smelting iron. In 1819 Telford began the construction of the Menai Suspension Bridge, one of the most graceful of bridges, still in good condition in spite of storms; it has a span of 570 feet

6. The noted Tower Bridge, not far from the Tower of London, is a suspension bridge with a second bascule bridge in the centre This can be opened upwards to admit the passage of large ships, its waterway being 200 feet wide. The total length is 490 feet.

7. The famous Forth Bridge, Scotland, is of the cantilever type, it is 5,330 feet in length, and stands 150 feet above high tide.

The Sydney Harbour Bridge in New South Wales, Australia, the most modern bridge in the British Commonwealth of Nations, was opened on 19th March, 1932. This bridge may fairly be described as one of the wonders of the world It crosses the sunlit expanse of Port Jackson from Milson's Point to Dawes Point, at so high a level (172½ feet) as not to interfere with shipping; ships taller than the Nelson Column in Trafalgar Square, London, can pass under it, the largest liner can pass without striking her topmasts.

Sydney Harbour Bridge was built by a British firm, Messrs. Dorman, Long and Co., at a price of over £4,000,000, it required nearly fifty thousand tons of steel, and the total length of the bridge is 3,770 feet, which is almost three quarters of a mile The deck of the bridge, the heaviest ever constructed, carries four lines of main electric railway, a roadway of fifty-seven feet which allows six lines of traffic, and two footways each ten feet wide, a total width of 159½ feet. The two halves of the arch were built out from each side of the harbour with the help of two gigantic creeping cranes, each of which weighed over six hundred tons, in August, 1930, the two ends met. The bridge, one of the greatest engineering feats of modern times, is like a labyrinth of steel. Sydney Harbour is famous as one of the finest natural harbours in the world, and Sydney is now the foremost commercial port in Australia The opening of Sydney's magnificent bridge was a great event in the history of Australia and of the Empire (There is an illustration of the bridge in Vol II p 506)

WILD CREATURES OF THE BRITISH ISLES

Badger.—The badger is a grey-coated animal with a white head marked with black lines It is one of the largest wild creatures in existence in the British Isles, sometimes measuring three feet in length. It lives in a burrow underground, and will eat almost anything, although its chief food consists of roots and insects The badger is found in woody and hilly country, and hibernates during the winter months. Although naturally harmless, it has strong jaws, and fights bravely and savagely when attacked Badger baiting, or worrying by dogs, used to be a popular sport in Great Britain, but it is now abolished The badger moves about and feeds at night, and consequently is little seen or known. It walks on its soles, placing the whole foot on the ground at once The hindquarters of the badger used to be cured as hams and exported to China, where they were esteemed as articles of food. Its hair is used in the manufacture of fine painting and shaving brushes The term "badger" is believed to originate from the word "badge," applied to the white mark on the animal's forehead

Otter.—This is a furred, water-loving animal about two feet long which burrows in the banks of quiet rivers in the British Isles It has finlike legs and webbed feet Its tail is nearly as long as its body, and is flattened to assist it in swimming The otter has valuable, thick brown fur It is highly destructive to the fish in the river, killing more than it requires for food, and often swimming down to the sea in search of fish, small crabs and lobsters, shrimps, mussels and oysters Because they despoil the rivers of their fish, otters are relentlessly hunted by men on foot with packs of otter hounds These dogs stand about two feet high and have thick, rough coats generally brown and black in colour They are gifted with a keen sense of smell and wonderful sight, are excellent swimmers and savage fighters

Packs of otter hounds are kept in some parts of the British Isles.

Grouse.—All game birds with feathered feet come, properly speaking, under the heading of grouse, but in general the name is applied only to four kinds of birds found in the British Isles These are (*a*) the red grouse or moorcock, (*b*) the blackcock, (*c*) the ptarmigan, and (*d*) the capercailzie.

The red grouse is found in large numbers on the Scottish moors, and also in northern England, and parts of Wales and Ireland This bird is a native to the British Isles, and is not found in any other country in the world. It is fifteen inches long and weighs about thirteen ounces Its plumage is generally red-brown with white spots on the underparts of the body The red grouse mates for life. The birds build their nest on the ground among the heather or bracken, and from six to a dozen eggs are hatched The eggs are usually of a reddish-yellow colour, spotted with brown Tender sprigs of heather, insects and grubs form the food of the red grouse.

The blackcock is a good deal larger than the red grouse, and lives in south-western England as well as Scotland. Its mate is known as the grey hen

The ptarmigan has dark-spotted greyish-brown feathers in summer, and in winter it is white excepting for its red comb, black outer tail feathers and a black stripe on either side of its head. No other British bird is so camouflaged by changes of colour. So like is the ptarmigan to its surroundings that it can very seldom be observed unless on the wing. It is found only in the Highlands of Scotland and some of the western islands. The bird's legs and feet are heavily feathered, and it measures about fourteen inches in length The mother bird will not leave her eggs at the approach of an enemy, and when her chicks are hatched she tries to protect them by uttering cries and trailing a wing as though it were broken, thus drawing attention towards herself and away from her young

The capercailzie, or wood grouse, is the largest member of the grouse family, being about the size of a small turkey In appearance it is like the blackcock Its feathers are greyish black, the male being green-breasted and the female red-breasted. At one time it was exterminated in the British Isles, but has been introduced into Scotland again from Sweden, and is now fairly common on the Scottish moors near Perth and Stirling.

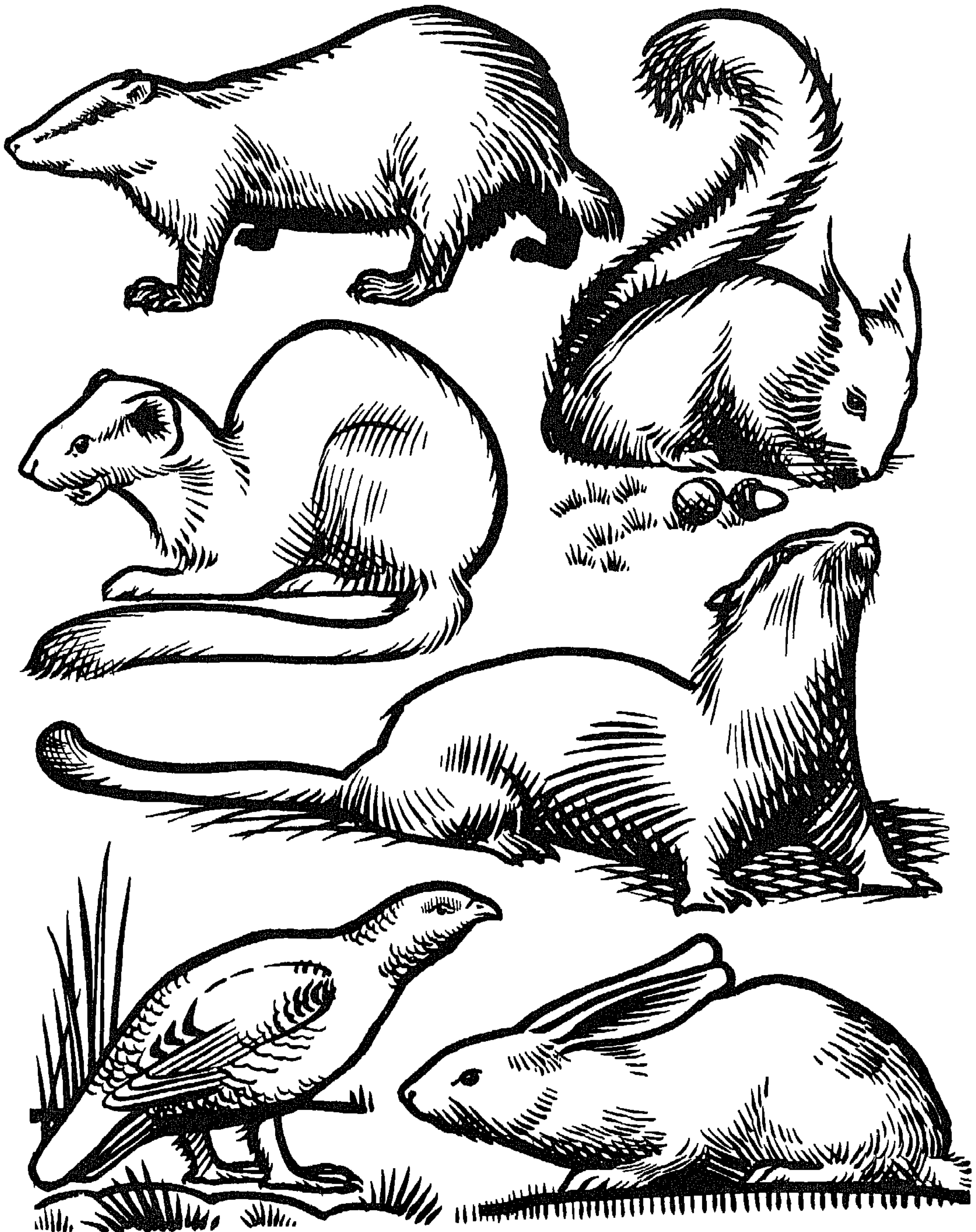
Grouse are preserved on the moors, and sportsmen are allowed to shoot them only during the months of September, October and November. Sometimes dogs are trained to assist at the shooting, and at other times beaters are employed to raise the birds and drive them towards the guns. The latter method is considered the better, because then the guns do not move from their positions and as the birds fly towards them the oldest and most powerful are shot first

Hare.—This name designates in general a group of rodents or gnawing animals including the hare itself and the rabbit. Six or more species of hares are known to exist in the British Isles. Their fur is reddish-brown in colour, and they have tall, erect ears, short tails and divided upper lips. Their hind legs are very long, assisting them to cover the ground with great rapidity. They have strong, prominent front teeth, suitable for gnawing.

The common hare is larger than the rabbit, and has longer ears and legs It does not live in a burrow as the rabbit does, but prefers the open air, hiding in a grassy depression or the furrow of a field. In stormy weather it crouches under the shelter of a hedge. Its food consists chiefly of vegetables, grain and the bark of young trees. The hare conceals itself by lying motionless in its form, and often will not move until almost trodden upon.

Rabbit.—The rabbit is a burrowing rodent of the hare family It is smaller than the hare, with shorter legs and ears, and its natural colour is a brownish-grey Its habits

SKETCHES FOR THE BLACKBOARD



Wild Creatures of the British Isles

Badger
Stoat
Grouse
Squirrel
Otter
Rabbit

also are different. The hare lives alone in the open field, but the rabbit is a sociable animal and dwells with its family in a burrow underground. It cannot run so fast as the hare except for a short distance.

The rabbit feeds and is most active during the twilight hours of morning and evening, but in lonely places it may be seen hopping about all day long It begins to breed at the age of six months, and produces four or five families in a year, so multiplies very rapidly A number of rabbits can work havoc in a garden or plantation, and in Australia, where they were introduced from England, they are a serious nuisance to the farmer. They are good for food, and their fur is used in the making of coats, neck furs and felt hats. Most of the rabbits sold for food and the rabbit skins treated in the British Isles are imported from Australia.

The rabbit has been domesticated as a pet and also for purposes of commerce. Tame rabbits differ greatly from wild ones. In colour they may be black, silver grey, white or pied. Their ears often droop instead of standing upright, and their fur, as in the case of the Angora rabbit, sometimes grows very long.

Wild rabbits are so destructive among the farmlands of the British Isles to crops, plantations of young trees and pastures needed for cattle and sheep that they are considered a pest and vigorous efforts are made to exterminate them. Snaring, driving them from their burrows by means of ferrets or gas and then netting and shooting them are the chief methods employed.

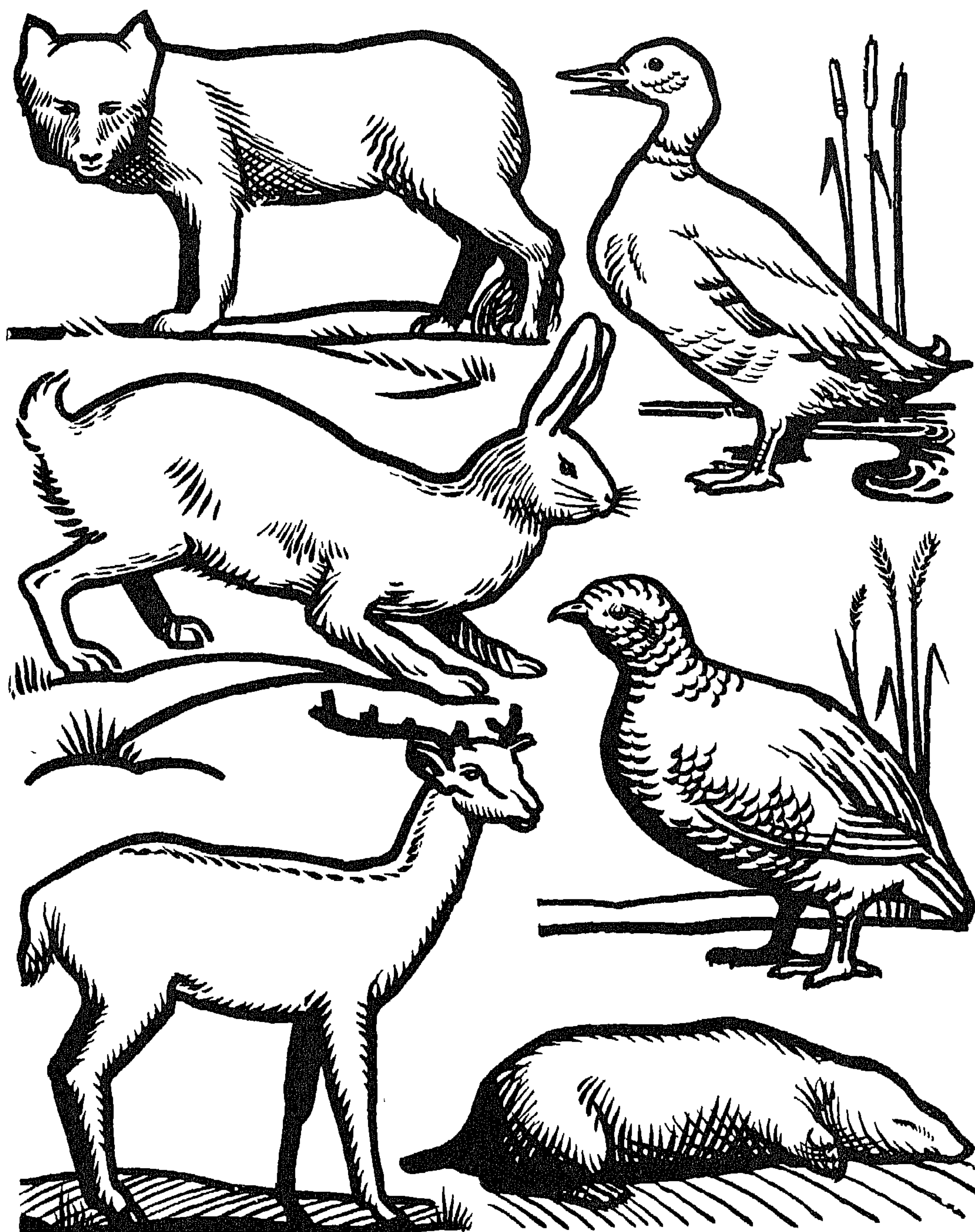
Deer.—The term deer stands for several kinds of four-footed, cloven-hoofed animals which chew the cud and possess solid branching horns renewed yearly. The horns, or antlers, are peculiar to the male animal, excepting in the case of the reindeer. The shedding of the antlers occurs in the springtime, and new ones quickly grow in place of the old. While growing, the antlers are protected by a hairy skin known as "velvet," which when the horns have matured gradually peels off. The male deer, called the stag, has his new antlers complete in the early autumn. During their growth he is harmless and inoffensive, but once properly equipped he applies himself to finding a mate, and many savage fights then take place between the stags.

In the British Isles there are three kinds of wild deer (*a*) the red deer, (*b*) the fallow deer, and (*c*) the roe deer.

The red deer is the largest of the three species. It lives in the Highlands of Scotland, in south-western England and in parts of Ireland It measures four feet at the shoulder and may weigh as much as four hundred pounds. The hind is smaller than the stag. The animals have red-brown hair, lighter on the underside of the body, and the young (called fawns) are blotched with white The antlers of the red deer are very stately, sometimes being a yard long, and the number of branches on them gives a clue to the animal's age. One male mates with many females, and the young are born in May or June, generally one at a time. The food of the red deer consists of grass, tender twigs, beech nuts and fungi, and the animals often lick salt from the rocks by the seashore. They sleep in the shade during the heat and feed in the early and late hours of the day They are exceedingly cautious creatures, with a very keen scent, and tax the patience of the deer stalker to the utmost.

The fallow deer stands about three feet high and is usually fawn-coloured and spotted with white It is preserved in parks in Great Britain and lives wild in Epping Forest, having been probably introduced many years ago from one of the countries near the Mediterranean sea

The roe deer is a small animal measuring about two feet high at the shoulder. It has a reddish coat with a white patch on the rump. Its antlers are not longer than six or eight inches and stand upright on the head, with three short tines or branches at the ends. Its ears are large in proportion to its small head The roe deer is native to Great Britain and lives in Scotland and in Cumberland.



WILD CREATURES OF THE BRITISH ISLES

FOX
HARE
DEER
WILD DUCK
PARTRIDGE
MOLE

Deer are hunted for their meat (called venison) and for their antlers, which are used in the making of knife handles. The deerhounds used in stag hunting are like large, rough-coated greyhounds in appearance, and possess a remarkable sense of smell. They have to be very carefully trained, as the utmost caution is required in stalking the wary and keen-scented deer.

Stoat.—The stoat is a British flesh-eating animal of the weasel family. The body of the male measures about ten inches and the tail four or five inches long, the female being somewhat smaller. The fur of the stoat is red-brown with white underparts and a black tail tip. In Scotland and in more northerly lands (where it is known as the ermine) the colour of the animal's coat changes to white during the winter

The stoat lives in holes in trees and banks, and weaves a grassy nest for its young. It feeds at night on mice, rats, rabbits and hares, hunting them out by its keen sense of smell. Its fur is very valuable. The stoat does not live in Ireland, but is found in considerable numbers in England and Scotland.

Partridge.—Partridges are game birds, and two kinds exist in the British Isles, the grey or common partridge and the red-legged or French species. The former is found in cultivated fields, living on grain and seeds, insects and leaves, and is not so wary of approach as the latter. The French has more gaily coloured feathers than the common partridge, and its beak and legs are a vivid red It lives in waste, sandy districts, and is very cautious and fleet of foot

The birds associate in coveys or companies of from ten to twenty, feeding in the early mornings and late afternoons During the hottest hours of the day they like to sleep and take dust baths in the sunshine When night comes on they form into a circle in the middle of a field and roost with their tails to the centre so as to be prepared for hostile attacks They build their nests of grass in the shallow depressions of cornfields or under sheltering hedges, and hatch out a dozen to eighteen eggs. The partridge-shooting season in the British Isles lasts from September to the end of January. Beaters are employed in wide open country to drive the birds towards the guns, but in short, rough stretches of land the use of dogs is preferred The most suitable dogs for the purpose are retrievers and pointers.

Wild Duck.—The mallard is the correct name of the common wild duck It is found in the British Isles and in many other countries of the world, being most numerous in northern districts. It has short legs, webbed feet and a wide, flattened beak. It is a water bird and very strong on the wing, its food consisting mainly of plants, snails, frogs, worms and insects. Its plumage is kept greasy by an oil gland and is very thick, so that water does not readily penetrate it. Generally the drake or male bird has more brightly coloured feathers than the female. The eggs are white or pale green, and the ducklings are able to swim a few days after they are hatched

The wild drake has red legs and feet and a yellow beak Its head and neck are green, its breast red-brown, its wings tipped with purple and its underparts white The feathers of the female bird, which is smaller in size, are spotted brown and black. The wild duck usually makes its nest in a depression in the ground near a quiet pool or stream, and is found in all parts of the British Isles. Many wild duck migrate into more southerly lands during the winter and return in the spring The domesticated duck has sprung from the mallard.

Squirrel.—The squirrel is a rodent or gnawing animal which inhabits trees. It has pointed ears and a very bushy tail nearly as long as its body. The British common red squirrel is about eight inches long Its coat is red-brown and white.

The grey squirrel, a larger and less handsome type introduced from North America, has spread far from its original haunts around London and is rapidly ousting its less aggressive cousin. Squirrels live in wooded districts. Their nests of bark, leaves and grass are placed in the forks and holes of trees, and their offspring are born in June. The squirrel collects great stores of nuts and other food for use in the cold weather, and hides them in various secret places. During the winter it hibernates

Mole.—This is a tiny burrowing animal with greyish black, velvety fur and very small eyes. The fur grows upright on the body and can thus be smoothed down in any direction, a useful feature in an animal which burrows. The mole is about six inches long, with a round body and powerful claws on its short front legs It has a sharp nose and no external ears Its muscles are remarkably strong and well developed, and its forelegs, when digging, move like paddles, thus greatly expediting the work

The mole lives for the most part underground, digging for insects, grubs and worms. Its burrowing benefits the soil by aerating it. As it digs it throws up the earth behind it into heaps. The mole hill constructed for its dwelling is a large mound built in an open place near water. Inside the mound, in the middle, is a little room from which many tunnels lead in different directions. The room is comfortably lined with leaves and grass and used as a nursery for the three or four young ones born about the month of May. The mole is apt to do mischief by burrowing amongst freshly sown seeds, and for this and for the sake of its fur it is remorselessly trapped

Fox.—The fox belongs to the wolf family and much resembles a dog. The pupils of its eyes, however, are oval instead of round. It has a slender body, sharp nose, long bushy tail and prominent ears.

The common fox of the British Isles usually has red-brown fur with white underparts. Its food consists of small animals and birds, fruit and insects. It prowls and feeds at night, sleeping during the daytime in the burrow of a rabbit or badger, or in a hollow tree, a cave, or a dry ditch. The female is called a vixen, and four or five cubs are born every year in the springtime The fox is preserved for hunting in the British Isles, or otherwise, on account of its depredations in the poultry house, it would have been exterminated long since. Its fur is very valuable.

CURIOUS BIRDS AND ANIMALS OF AUSTRALIA AND NEW ZEALAND

Kangaroo.—The kangaroo belongs to the marsupial family, or the group of animals which carry their young in pouches. It inhabits Australia and New Guinea. The kangaroo's forelegs are small; its tail and hind legs are very long and powerful, and these are used for hopping over the country in great leaps. The animal has a small head and pointed face, with erect ears Its fur is sometimes red, or it may be grey or black

There are many breeds of kangaroos, the tallest standing about eight feet high, while the smallest is no larger than a rabbit The tail is long, tapering and very heavy. It is used for balancing during rapid movement and as a prop when the animal is at rest Kangaroos are grass-eating creatures, and they also dig up roots for food. They graze in herds during the night and sleep in the scrubland during the day They will devour fields of young wheat, hopping about like rabbits and making off at terrific speed when frightened Often in a single leap a kangaroo will move over ten yards of ground

Although generally a timid and harmless animal, a kangaroo will fight when at bay, standing on its hind legs and tail with its back to a tree. It can tear a dog to pieces with its forelegs, and the sharp claws of its strong hind legs can inflict dangerous wounds.

When hard pressed a kangaroo will cross water, and has even been known to swim over an arm of the sea Generally one young kangaroo is born at a time, and it is lifted by its mother into her pouch, where it clings with its mouth to a teat When fully grown it ventures out of the pouch and begins to feed on grass, but it still sleeps in the pouch and also returns to it whenever frightened.

White people generally do not care for the flesh of the kangaroo although it affords good food to the blackfellows The skin supplies a soft leather suitable for slippers, gloves, rugs and overcoats.

Wallaby.—This is the name given to many of the smaller breeds of kangaroos The wallaby lives in the scrubland of Tasmania, Australia and New Guinea. Like the kangaroo proper, a wallaby is pouched, and has short forelegs and strong hind legs and tail. It has the same small, tapering head as the kangaroo, and prominent upright ears, but it is redder in colour and its front teeth are a little different The wallaby lives far away from towns and people, and is seldom seen excepting by hunters, who value it for its flesh and skin

Koala.—Like the kangaroo, the koala is a pouched animal It is found in Australia and is often called the native bear, although it has none of the characteristics of a bear. The koala is a quaint little creature resembling a large, fat cat with eyes like saucers. It lives in the eucalyptus trees and is quite harmless, feeding on the leaves. It is about two feet long, and has grey fur, with white underparts and no tail.

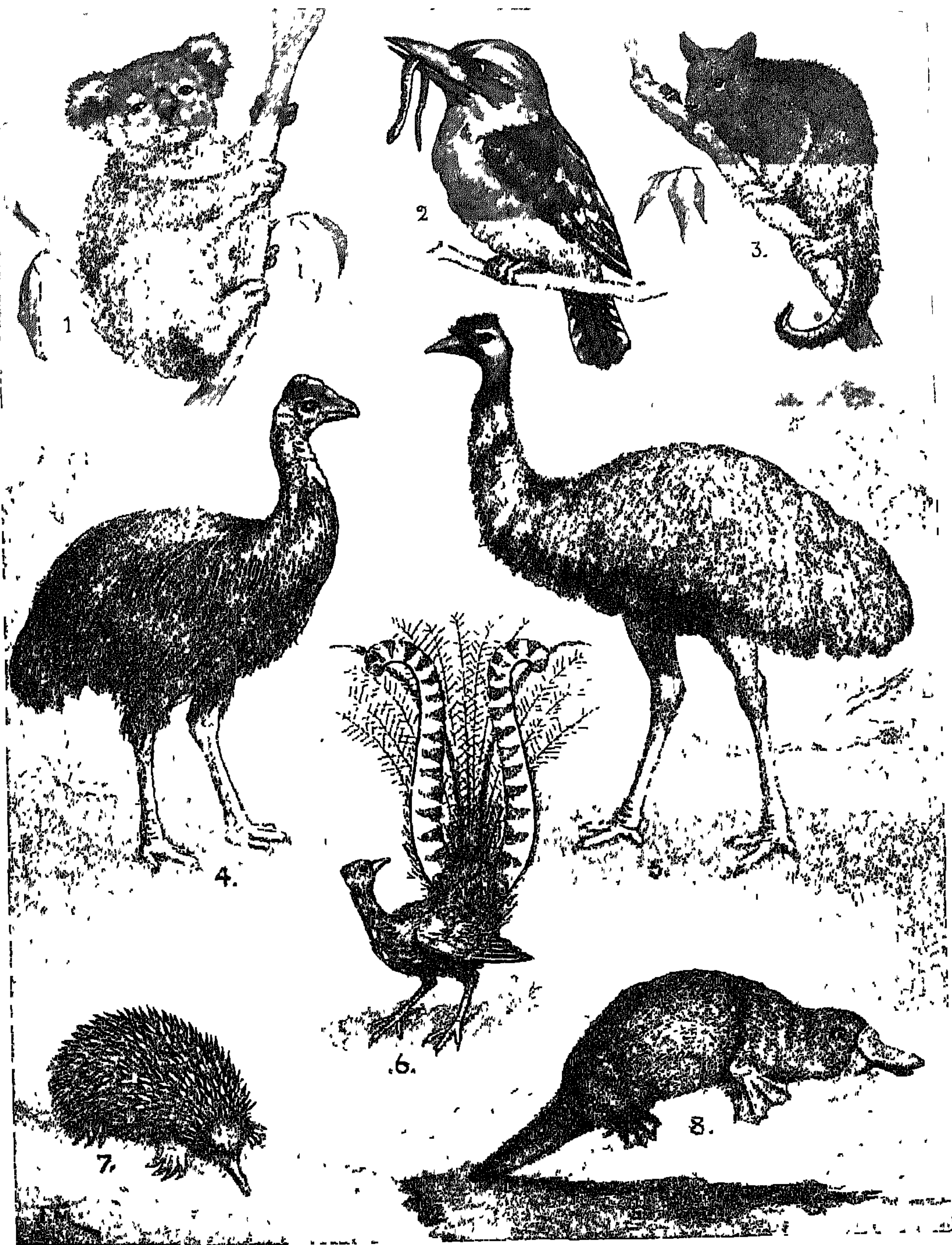
The koala is an excellent climber, and when travelling about the trees the female carries her young on her back. Sometimes the animal descends and digs up roots for food It has large pouches in its cheeks, and these it fills with food, which is then carried off to its home in the tree tops The killing of koalas in Australia is prohibited

Lyre Bird.—Several breeds of lyre birds live in the Australian forests They are so-called from the remarkable arrangement of the tail in the male bird. A lyre was an ancient musical instrument somewhat similar to a harp, with the strings attached to two symmetrically curved horns. The two outer feathers of the lyre bird's tail are curved in the form of the framework of a lyre, and the narrow, scantily barbed feathers in between represent the strings.

The colours of the feathers vary in the different breeds, though many are dark brown with greenish tips. Lyre birds have no sweet singing voices, and are not fond of flying. They live chiefly on the ground in the thick bush, and can run very fast Their food consists of worms, snails and insects

Echidna.—The echidna, or anteater, is an Australian toothless, burrowing animal resembling a hedgehog. There are two species, one with five toes on its feet and the other with three. The back of the echidna's head and body is covered with sharp spines. It has a long, slender beak from which it shoots out a sticky tongue to seize the ants, which form its chief food. The female echidna lays one egg but does not sit on it. It is hatched in the warm pouch on the underside of the body, and the young animal remains there until fully grown. The echidna is one of the lowest forms of animal life in existence, and its anatomy resembles in many ways that of a reptile.

Platypus.—The platypus, duckbill or duckmole is an Australian aquatic animal with webbed feet, fur like that of a mole and a snout similar to a duck's bill. It is about a foot and a half in length, and has a short tail flattened like a beaver's Its fur is dark brown above and whitish below the body; its eyes are small and deep set like those of a mole, and it has pouches in its cheeks for holding food The large openings for ears are not seen above the fur, but the animal's hearing is acute Its nostrils are found near the tip of the bill. The male's hind feet are



Curious Birds and Animals of Australia

1 Koala or Native Bear
2 Kookaburra or Laughing Jackass
3 Opossum
4 Cassowary
5 Emu
6 Lyre Bird
7 Echidna or Anteater
8 Platypus, Duckbill or Duckmole

provided with hollow spurs connected with poison cells and probably used for fighting during the mating season.

Duckbills live in pairs in burrows built in the banks of streams. They choose a spot near a deep pool in a river and construct a burrow leading from the water. The burrow has one unseen entrance from the water and another from the land In the depths of the burrow the female makes a grass-lined nest and lays two eggs. Whether she hatches them or not is uncertain. Duckbills move about at night, when they feed on water animals, worms and insects. They dive and swim, but their movements on land are very clumsy It is difficult to approach them for they are exceedingly timid and cautious As in the case of the echidna, the platypus is placed on the lowest rung of the ladder of animal development, at the head of which is man.

Opossum.—The so-called opossum of Australia is really a phalanger, or pouched animal inhabiting trees, and is falsely named an opossum. The koala is a member of the same family Phalangers are remarkable for the strange formation of their back feet. The toes are webbed, the first having no nail and resembling a thumb, and the second and third being wrapped together by one piece of skin The animals have thick, furry coats, and all but one breed have long tails capable of grasping the boughs of trees They are on the move amongst the trees at night, and feed on almost anything edible, although their chief food consists of fruit, leaves, insects and blossoms

The opossum is hunted for its beautiful grey fur. The Tasmanian species has black fur which is very valuable, and hunters are fast exterminating the breed. The animals are often caught in snares. Bush boys find a tree with a scratched bark, showing that an opossum family lives high up in a hollow of the trunk, and they fasten a noose to the tree The opossum sleeps in the daytime and when it comes down at night to feed or drink it is caught in the snare Some opossums are shot by hunters.

The most curious of the opossums is the flying phalanger There are three species of these, and they are found only in Australia and New Guinea The flying phalanger is pouched It is rather like a squirrel in appearance, and has the power of a gliding flight. This is because it has a tissuelike extension of skin surrounding its body, resembling a wide frill, and when it leaps into the air this loose skin spreads out into a kind of parachute, enabling it to make long gliding jumps from tree to tree No pouched animal in the world excepting the flying phalanger is able to glide

Laughing Jackass.—This bird is the giant kingfisher of Australia and New Guinea, and has received its name from the queer mocking sound that it makes at regular intervals about the times of dawn and sunset. Members of the kingfisher family are found all over the world. Most of them have a handsome appearance, and are provided with strong, pointed beaks for catching the fish or reptiles on which they feed

The laughing jackass or kookaburra (sometimes called the "settler's clock") generally has a brown, black and white plumage tinged with blue and green. It lives in the woods, feeding mainly on snakes, worms, insects, snails, and tiny animals and birds.

Emu.—The emu is the largest of Australian birds, and is found only in Australia and some adjacent islands. It is the second largest bird in existence, being next in size to the ostrich, to which it is somewhat similar in appearance. Its wings, however, are less developed than those of the ostrich, and it relies entirely upon its swiftness of foot to escape its enemies. The hen emu is larger than her mate. Both sexes are valiant fighters, but the hen is famous for the strength and speed of her kicks

The plumage of the emu is brown and slender, spotted with grey, and the feathers of the young birds show long stripes of a paler

colour In common with all wild life in Australia the emus have suffered from the invasion of man, and are now rare excepting in the wilder parts of the country They live in small flocks, and feed chiefly on fruits, especially the prickly pear. They are readily domesticated The eggs are green, and are hatched by the male bird.

Cassowary.—The cassowary is a large running bird related to the ostrich and emu. There are several breeds of cassowaries. They stand about five feet high, and are easily distinguished from emus by the horny helmets covered with thin skin on the top of their heads The head and upper part of a cassowary's neck are bare of feathers, and usually the skin of the neck is brightly coloured The feathers look like coarse hair because they are so narrow, and they are black and shiny

As in the case of the emu the cassowary's wings are very small, and it depends upon its swift running to escape from danger It has sturdy legs and can kick powerfully. Its nest is a hole in the ground, and the dark green eggs, of which there are generally six, are hatched by the male If captured young, the cassowary may be easily tamed.

Kiwi.—This is the Maori name for the apteryx, a New Zealand bird about the size of a goose, with very small wings and no tail. Its feathers, which are long and hairlike, cover up its wings, and it is unable to fly The apteryx has an exceedingly long, sharp beak with nostrils at the tip, a phenomenon not seen in any other living bird It sleeps in the daytime, and feeds at night on worms and insects. The hen lays as a rule one egg which is remarkably large for a bird of her size, often measuring five inches in length and three inches across The male hatches the egg Kiwis are harmless and timid birds, and their numbers have diminished so seriously that they are now under the protection of the New Zealand government.

MISCELLANEOUS WILD ANIMALS

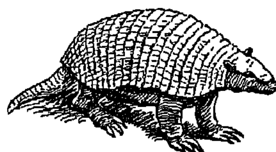
(The best known wild animals have already been dealt with in various parts of this work, see especially Vol. I, pages 399, 456, 482, Vol II, pages 461, 480, 482, 517, 537, Vol. III, pages 491, 538, 608.)

Anteater, a member of the toothless order of animals, has a curiously long head with the muzzle prolonged in the form of a tube, with a small mouth at the tip The long, wormlike tongue is adapted for thrusting into crevices of ants' nests and licking up the ants. Its long curved claws enable it to tear open the ant-hills The great anteater of South America measures 4 ft in length exclusive of the long bushy tail It inhabits the swampy savannas and humid forests, but is nowhere common



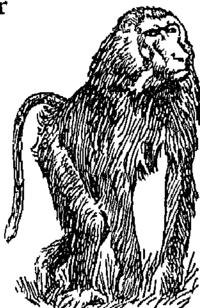
ANTEATER

Armadillo, a mail-clad member of the misleadingly named order Edentata—toothless. It is a burrowing animal, with powerful digging claws, and feeds on ants, termites, insects, worms, reptiles and carrion. It is a harmless and inoffensive creature inhabiting the forests and pampas of South and Central America The body is protected by a bony case, partly composed of solid bucklerlike plates and partly of movable transverse bands. Most of the species are esteemed good eating by the natives. The largest species, the giant armadillo, measures nearly a yard long.



ARMADILLO

Baboon. An African monkey of the dog-headed genus Baboons are ugly and ferocious, their limbs being of nearly equal length they run on all fours with ease, they have brightly-coloured bare patches on the hinder parts; they have strong jaws and formidable tusks and large cheek-pouches. Baboons mostly live among the rocks in large droves and are great pests to the farmer and gardener



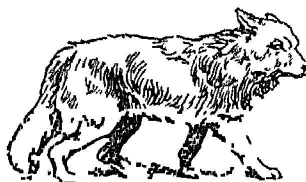
BABOON

Chameleon is the common name of members of one of the sub-orders of lizards. They are distinguished by the possession of a long club-shaped, telescopic tongue which can be rapidly projected and is provided with a sticky secretion at its tip which is used for capturing insects. Its large eyes are covered with a lid having a minute hole in the centre, and the two eyes work independently The grasping feet are formed by the fusion of the digits into two opposable bundles, and the tail is prehensile The chameleon has the power of changing its colour This is usually green or brown and approximates to the colouring of its surroundings. In most species the mother buries her eggs to be incubated by the heat of the sun The principal homes of the chameleon are in the forests of Africa and Madagascar but they are also found in Arabia, southern India and Ceylon.



CHAMELEON

Coyote, the prairie wolf of North America, is a member of the dog family. It is smaller than the wolf and more jackal-like. The general colour is tawny mingled with black and white above and whitish below. Coyotes live in burrows in the plains and hunt in packs at night. They are slinking creatures, and though not dangerous to man they are a great pest to the poultry farmer A large proportion of their food consists of hares, chipmunks and mice, and when hard put to for food they will eat hips, juniper berries and other wild fruit.



COYOTE

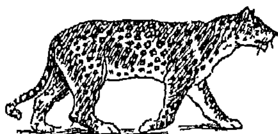
Jaguar, the largest species of the American spotted cats, inhabits the forests of South America and the pampas It is a large savage beast, spotted somewhat like a leopard, but the black spots are larger and arranged in rosettes with a black spot in the centre. It rests in trees, hidden among the leaves, kills monkeys, peccaries, and other forest animals; cattle, sheep and horses on the pampas, alligators and turtles near the rivers. The cry of this great cat, which is usually heard at night during the pairing season, is deep and hoarse.



JAGUAR

Leopard, a large member of the cat genus, is a ferocious, bloodthirsty, cunning animal found in Africa and throughout Asia The fur is usually a yellowish tawny colour with black spots arranged in rosettes, but without the central black spot as seen in the jaguar. The leopard is an expert climber

of trees and obtains its prey either by springing upon it from an ambush or by a stealthy stalk It will eat any animal it can overcome —antelopes, goats, monkeys—and is especially fond of dogs It rarely attacks man unless provoked, but is very dangerous to children. In India the leopard is commonly called the panther. It is hunted for its skin, which is of value for rugs.



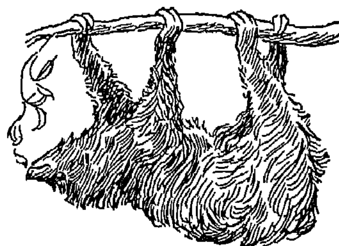
LEOPARD

Puma, a large carnivorous mammal of the cat family, is called "couguar" by the French and "panther" by hunters of the United States. It generally resembles the leopard, but it has no spots and is sometimes spoken of as the mountain lion The head is small and has no mane, its ears are large and rounded, its tail cylindrical but without a tuft at the end. The general colour is tawny, but the lower parts, inner surface of the limbs and throat are dirty white. It is common in the dense forests which clothe the mountains of Central America but is found throughout America from Canada in the north to Patagonia in the south The puma is an expert climber but is also found in scrub and reeds along the banks of rivers as well as on the open prairies It is mostly harmless to man, but a dangerous foe to horses, cattle, deer and dogs, frequently doing great damage in the neighbourhood of cattle ranches.



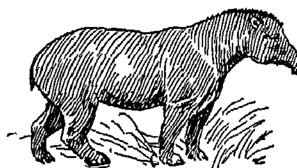
PUMA

Sloth, a large, shaggy, brown or grey animal, which lives entirely in the trees of tropical America. Its limbs end in hooklike feet armed with curved claws, by which it clings back downwards from the boughs of trees. Generally slow and inactive it can on occasion travel rapidly along the branches It rarely descends to the ground, on which it crawls with considerable difficulty owing to the unequal length of the limbs and the peculiar feet. Sloths are solitary silent animals. They feed at night on leaves, young shoots and fruit. They are classed with the Edentata or toothless animals although they have five pairs of teeth in the upper jaw and four in the lower.



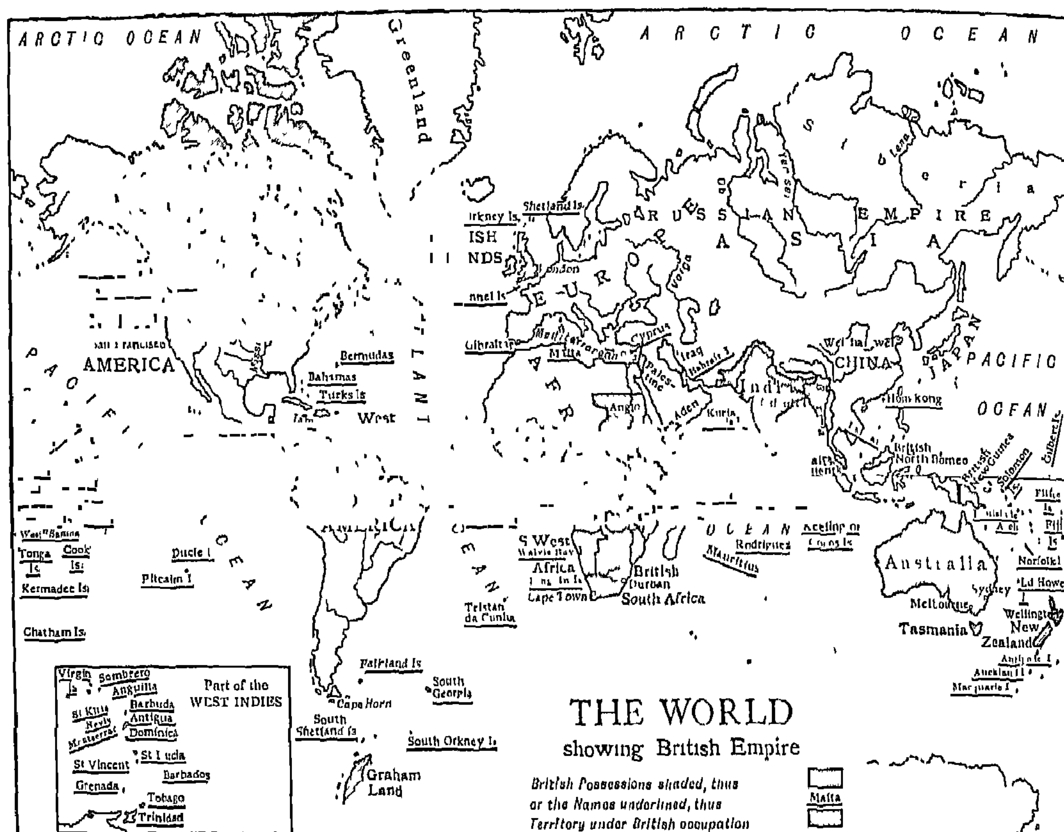
SLOTH

Tapir, one of the oldest existing types of mammals, is a native of South and Central America, the Malay Peninsula and the East Indies. It is massively built with the nose and upper lip joined to form a short flexible trunk. There are five toes on the front and three on the hind feet The American species are usually covered with dark brown hair when adult, but the young are spotted and striped with white. The largest species which inhabits the Malay region has black fore- and hind-quarters and a white body. The tapir is a harmless animal and is entirely a vegetarian.



TAPIR

OUTPOSTS OF THE EMPIRE



Gibraltar.—The famous Rock of Gibraltar is a Crown Colony in the extreme south of Spain, and consists of a strong fortress and a town containing about twenty thousand inhabitants. From north to south Gibraltar is three miles long; its width is three-quarters of a mile, and it is more than 1,300 feet high. It protrudes into the Mediterranean sea as a long, narrow and lofty peninsula. Its southern end is called Europa Point. The northern limit of Gibraltar descends suddenly to a low neck of land, a mile and a half long and half a mile wide, connecting it with the mainland of Spain, and across this isthmus runs a stretch of neutral country separating the British from the Spanish territory.

The town of Gibraltar is divided into North and South districts. The North town has narrow, winding streets passing through poor neighbourhoods, but in the South town are more attractive dwelling-places, among them the governor's residence at Europa Point. There is a fine cathedral built in the Moorish style and a castle which the Moors erected during their occupation of the peninsula.

Gibraltar is not only a great fortress guarding the western entrance to the Mediterranean, but also an important port.

Moles have been built to enlarge and protect the harbour on the west coast in Gibraltar bay, with the result that it now contains two hundred and sixty acres of water and can accommodate the whole of the Mediterranean fleet Besides being thus a naval base of the first importance, it is equipped with cold storage rooms and tremendous reserves of fuel, making it a great commercial port and coaling station for steamers plying to and fro The harbour of Gibraltar is a refuge for vessels during the dangerous easterly gales, called "Levanters," experienced in those parts

In olden days the Rock of Gibraltar, then called *Calpe*, and Mount Abyla, called *Ceuta*, standing opposite Gibraltar on the coast of Africa, were known as the "Pillars of Hercules." One legend represents Hercules as having torn them apart in order to allow the entrance of the Atlantic Ocean, and another causes him to have set them close together so as to keep ocean monsters out of the Mediterranean sea.

Many nations have aspired from time to time to possess Gibraltar, the valuable "Key to the Mediterranean." In 711 it was captured by the Moors, who occupied it until the beginning of the fourteenth century, when it was taken from them by the king of Castile. The Moors recaptured it later, and beat off further attacks by the Christians until 1462, when it again fell into the hands of Spain During the next two hundred years it was besieged on several occasions by different Spanish nobles jealous of one another's possession of it.

In 1704 Sir George Rooke, commanding a British and Dutch fleet with an army of thirty thousand men on board, was ordered to sail against Cadiz On the point of setting out he received instructions to make for Gibraltar instead, and in due course entered the bay. He landed a force of marines, and began a heavy bombardment of the fort. After six hours' shelling, Gibraltar was captured The Spanish garrison of five hundred men capitulated, and Rooke took possession of the fortress at the cost of sixty men killed and two hundred and fifty wounded.

Several attempts were made by Spain afterwards to regain Gibraltar, but none was successful The combined French and Spanish armies laid siege to the fortress for six months, shortly after the British occupation They made a valiant but ineffectual attempt to surprise the garrison, and their navies also carried on warfare with Britain at sea. Thirty years later the Spaniards vainly besieged Gibraltar again

In 1779 a final determined effort was made. The Spanish fleets blockaded Gibraltar at the same time as their armies erected long lines of batteries on shore from which the fortress was heavily shelled. The commander of the garrison during this siege was General Sir George Augustus Eliott. He kept up a destructive cannonade upon the besiegers, and the British navy, under Admiral Rodney, making attacks upon the blockading fleets, succeeded, after the lapse of some months, in getting food supplies through. The siege and blockade continued, however, and the garrison was in sore straits when ten months later the British fleet again broke through with fresh provisions. After this the besiegers carried on a shattering bombardment of the fort, only to be met by still more determined resistance, and a surprise attack on the part of the garrison destroyed a great section of the siege works

In a final effort an army of forty thousand men on land and a large fleet in the bay combined to attack the fortress. Shot crashed into the fortifications continually, not only from the land batteries, but also from floating batteries which had been erected. Eliott's answering fire was made with red-hot shot, and in the height of the battle many of the attacking ships were set alight, causing consternation and heavy loss. Four months later, after the siege had lasted four years, the besiegers withdrew, and no further attempts to expel the British from Gibraltar have been made

Malta.—The addition of Malta to the British Empire has proved of the utmost importance both in politics and commerce. When Malta became a British possession, Britain was already a great naval power, holding in Gibraltar the key to the Mediterranean sea, and needing only this one place more to make its position secure. Malta is a strong island fortress, naval base and coaling station in the centre of the Mediterranean, almost halfway between Sicily and northern Africa, and, before the advent of British control, had been for two centuries the home of a military fellowship, the Knights of Malta.

The Maltese group of islands consists of Malta, Gozo, Comino, Cominotto and the rock Filfia. Malta itself is ninety-one and a half square miles in area—about the size of the Isle of Wight—and has a population of two hundred and seventy thousand. The island is made up of a series of hills and valleys of which the soil is thin and poor. Excepting in the south the coast line is very irregular and forms several bays. The capital, Valletta, is built on a promontory and overlooks a fine double bay, the Grand Harbour, on the southern side, being large enough to hold all the Mediterranean fleet The climate of Malta is pleasant and mild in winter, and hot in summer.

Building-stone is quarried from the hills, fields of wheat, barley and clover are grown, and cattle, asses, mules, goats and sheep are reared. Cows of a large and powerful build are used for ploughing. Viewed from the summit of a hill the land resembles a great chessboard, the countless small fields and gardens being surrounded by walls, or terraced to protect the scanty layer of soil from being swept away by wind and rain. Lemons and blood oranges, early potatoes, melons, grapes, figs, onions and beans are exported to Britain. The special products of Malta are honey and lace; the Maltese are famous also for their filigree work, and for the manufacture of cotton materials and cigarettes, while hundreds of people are engaged in fishing. The principal resources of Malta are derived from its being a military station and the headquarters of the Mediterranean fleet.

The Maltese are descended from the Phoenicians, and all speak among themselves the Phoenician Maltese. They are staunch adherents to the Roman Catholic church, and their religion plays a great part in their lives. The people are merry and vivacious, always willing to put aside work for a *festa* of the Church. Many belong to guilds which meet for prayer and purposes of charity Many begin their day's work by attending Mass.

The city of Valletta was built by Jean de la Valette, a Grand Master of the Knights of Malta. It is the chief British naval and coaling station in the Mediterranean, has extensive docks and is an important place of call for vessels *en route* for the East via Suez A lighthouse and the fortress of St. Elmo stand at the end of the promontory on which Valletta is built. The city itself consists of a long, narrow plateau sloping down to the harbour of Marsamuschetto on the one hand and to the Grand Harbour on the other. It is not easy to move about in such a hilly place, and the chief recollection that tourists have of Valletta is a climb up "streets of stairs" in the hot sunlight. The governor's mansion was once the palace of the Knights of Malta, and other splendid buildings erected by the knights are now palaces of the Maltese aristocracy. The library, university, and museum are objects of special interest, and the interior of St. John's church is very beautiful In Valletta "even the poor," said Thackeray, "live in palaces."

Sliema is a suburb of Valletta, and a summer resort. Valletta is also connected by railway with Città Vecchia, the old capital in the centre of the island, where dwell in stately residences many of the Maltese nobility, holding titles bestowed by Grand Masters or by kings of Aragon, and here are the catacombs and the ancient cathedral. Blue skies and sunlight, stone mansions with balconies, fountains and courtyards, orange

and lemon groves and gardens of brilliant flowers invest Malta with a resemblance to Italy Reminders of the East, too, exist in the appearance, clothing and customs of the people, in the confused din of the markets and the design of the more ancient buildings. "In Malta is the meeting of East with West."

With its adjacent islands, Malta is a self-governing dominion, administered by a governor and a local government with full control of internal affairs. Imperial concerns only, such as the navy, army and coinage, are outside the province of the Maltese legislature. The elections are made under a scheme of proportional representation. English and Italian are spoken by most of the educated Maltese The growing population and scarcity of employment are matters which cause anxiety to the Government of Malta, and organised emigration is necessarily resorted to The Strada San Marco, in Valletta, occupied by the lower working classes, is said to be the most densely peopled district in the world.

History of Malta.—Because of its safe anchorage and position between Europe and Africa, from olden days Malta has been eagerly desired by nations seeking to add to their maritime trade and possessions. Thus it became the scene of conflict of such peoples as the Carthaginians, Romans, Arabs and Normans Its historical documents contain in miniature the history of Europe, and its ancient relics represent the different stages of western civilisation

The Phoenicians—On all the Maltese islands discoveries have been made of immense Phoenician buildings similar to Stonehenge, of ancient pottery, flint knives and the bones of sacrificed animals. The word *Malta* is believed to be derived from the Phoenician *Malet* meaning "shelter" and referring to the island's famous harbour. The Phoenicians were "the foremost of barbarian nations, the only real political rivals of the Greeks. They sailed from the narrow strip of land that lay between Lebanon and the sea, where are their old and famous cities of Tyre and Sidon. Their tongue was the same as the Hebrew. The Phoenicians were the oldest mariners in the world of their day, and the most cunning traders. All the various forms of alphabet now used in Europe have come in different ways from the letters first used by the Phoenicians"

For seven hundred years Malta was possessed by the Phoenicians. The Phoenician structure in the best state of preservation in Malta is Hagiar Kim, the "Home of Veneration," a mighty ring of stones partitioned into divisions which were used for purposes of worship and sacrifice. Among the ruins are figures of Sidonian gods and stonework decorated with date leaves—unmistakable signs of the presence of the East. A similar building, called the Giant's Tower, stands in Gozo In the seventeenth century a slab inscribed with both Greek and Sidonian lettering was found in Malta, and this has proved a valuable key to the deciphering of the Phoenician language.

The Greeks followed the Phoenicians in Malta. They called the country *Melita* or "Land of Honey," and built a city of Melita in the centre of the island. This city at a later date the Arabs fortified and called *Medina*. It was the capital of Malta until Valletta was given the precedence in the middle of the sixteenth century Medina then became known as *Città Vecchia*, or the old city. A Greek dwelling house is preserved there, and in the museum of Valletta are Greek coins and pottery and Greek inscriptions showing that the cultivated Maltese must at one time have conversed in the Greek tongue

The Carthaginians succeeded the Greeks. During the series of wars fought between the Romans and Carthaginians for the mastery of the western Mediterranean, Malta changed rulers many times On one occasion it was devastated by the Roman leader, Regulus, and when at length the Carthaginian general, Hamilcar, ceded to Titus Sempronius Gracchus the domination of the Great Sea, Malta was definitely given

over to Roman government. Hannibal was probably born in Malta.

The Romans ushered in a period of prosperity for Malta. It was described by Roman writers as famous for its wealthy inhabitants and beautiful mansions, and it became a Roman winter resort. Its cotton cloth found a ready sale in the Roman markets, and mention was also made in contemporary documents of the Maltese dogs—small, silky-haired terriers—and of Maltese pirates, who were called "the ablest corsairs in the Mediterranean."

During the Roman occupation the shipwreck of Paul the Apostle took place on that part of the coast now called St Paul's bay Paul's ship was blown ashore by the *Euroclydon,* a fierce, wet, north-east wind which now goes by the name of the *Gregale.* A stone figure of the saint has been erected on an island in the bay, and an old church standing on the site of one yet more ancient, hallows the place where the Apostle and his shipmates landed. They were welcomed by the Maltese, who made a fire for them, out of which a viper is recorded to have crept and coiled itself round Paul's hand. Paul is said on that account to have banished all reptiles from Malta. He is believed afterwards to have converted the Maltese, and consecrated as the first bishop of Malta, Publius, the son of the Roman governor. The Apostle was in due course chosen to be the patron saint of the island, and his name and that of St John, the patron saint of the Knights of Malta, occur with great frequency everywhere. When the Roman Empire was split up, Malta became a member of the eastern or Byzantine portion, and remained steadfastly Christian during the centuries following.

The Arabs in A D. 870, encouraged by the teachings of Mohammed, took possession of Malta in the course of their advance through Syria, Palestine and northern Africa. They put the Greeks and the Christian bishop of Malta to the sword, and brought to an end the Byzantine Government, substituting instead the rule of an Arab emir. The Arabs dominated Malta for two hundred years, but never exterminated the Christian faith. For the Mohammedan religion to-day, the Maltese profess nothing but enmity and scorn, arising probably from the ill-treatment endured by their forefathers at the hands of the Arabs. Many were tortured by the emir, and the Arabs had finally to erect a castle on the site of the present fortress of St. Angelo to protect themselves against native rebellions. The name *Melita* they corrupted to Malta, and they also fortified Medina, the capital The *faldetta,* a combined hood and cape worn by the Maltese women, is Arabic in character. It is designed to veil the face in the manner customary among Eastern women. The faldetta resembles a nun's hood, and is made of black material stiffened by whalebone The poorer classes use it for ordinary outdoor attire, and the women of the upper classes put it on when they attend church The cape of the faldetta hangs over the shoulders like a shawl The garment is always black, made usually of silk or some such light material, and serves as a protection from both heat and cold.

The Normans, under Roger of Hauteville, who claimed Malta and Sicily by inheritance, drove out the Arabs in the eleventh century, and Roger became Count of Malta He was enthusiastically welcomed by the Maltese, who rejoiced in this triumph of the Cross over the Crescent "The priests crept from their catacombs; the ruined churches were restored." To this day a *festa* is held to celebrate the ejection of the Arabs from Malta.

Until 1530 Malta remained a feudal benefice under the control of kings of Sicily, German emperors, kings of Anjou, Aragon and Castile. It was a centre of secret plotting and party quarrels, frequently pledged for money and tyrannically taxed. In this period, however, a national consciousness came into being in the form of a People's Council elected by popular vote and composed of the nobility, clergy and commons. The offices of State and the benefices of the

Church were all held by natives of the island One-third of the land in Malta to-day belongs to the Church, and many Norman buildings may still be seen in Città Vecchia. From this feudal period has descended the Maltese code. In 1530 Malta was given by the emperor Charles V. to the order of St. John of Jerusalem, by the knights of which it was occupied until 1798.

The Knights of Malta.—In the eleventh century some merchants of Amalfi, a town near Naples, founded at Jerusalem a hospital for Christian pilgrims. It was dedicated to St John the Baptist. The deeds of mercy done by the Hospitallers led pilgrims and crusaders to bequeath to them lands and wealth, and the Hospitallers then formed themselves into a religious order, taking vows of chastity, poverty and obedience, and at a later period an additional oath to aid and defend the Christian faith. The order grew in fame and size, and soon possessed branches of a military-religious character in most countries of Europe. The dress of the order was a black robe and a white eight-pointed cross, now called the Maltese Cross. In battle the knights wore red surcoats decorated with white crosses. The head of the order, the Grand Master, was elected by a committee chosen from the different branches

When expelled from Jerusalem in 1290 the knights went to Cyprus and thence to the island of Rhodes, which they captured and made their home for over two hundred years During that period they were engaged in sea warfare, controlling a fleet of galleys for the protection of Christian merchants from the pirates in the Mediterranean The flag of St. John quickly became an object of fear and hate to Mohammedan sailors, and in 1523 the sultan of Turkey, Solyman the Magnificent, conquered Rhodes and drove out the knights, who then numbered about four thousand. They found temporary lodgings in Crete and Sicily, and seven years later settled in Malta.

The advent of the order ushered in the most glorious period of the history of Malta The knights strongly fortified the island with bastioned ramparts, built the fort of St. Elmo at the end of the promontory on which Valletta now stands, and forts at the end of other peninsulas projecting into the Grand Harbour. A great attack on Malta was made by the Turks in 1565. The knights' red galleys, directed by the generals of the order in their black robes, proved an ever-increasing menace to the Turkish shipping in the Mediterranean, constantly attacking it and carrying off men and plunder. Malta grew very wealthy in consequence, and soon contained hundreds of Turkish slaves. To end this state of war Solyman finally decided to capture Malta.

At this time the Grand Master of the Knights of Malta was Jean de la Valette, who had become famous as a commander of one of the galleys He had about nine thousand men at his disposal, of whom probably six hundred were knights and the remainder hired soldiers, Maltese troops and galley slaves. The Turkish army consisted of thirty thousand men, and these were twice reinforced during the siege of the island. The Turks erected batteries on the shore and bombarded the fortress of St. Elmo with heavy cannon balls. The walls quickly began to break into fragments under the hail of blows, but the knights refused to surrender. As the days passed they rushed out several times and attacked the enemy, seeking to destroy their guns, but were always beaten back into the fort The guns from the other forts across the Grand Harbour assisted the knights, and thousands of Turks were slain, among them Dragut, their ablest leader Gradually the outer walls of the fort were reduced to a mass of ruins. The defenders then sent messages to the Grand Master asking permission to withdraw into a place of safety, but he replied that the fort was to be defended to the last. He was expecting reinforcements from Sicily, and the longer the fort could hold out, the better chance had the knights of driving off the Turks. Instead of retiring from the fort, therefore, the defenders were joined by

fresh knights who reached them under cover of darkness For five weeks the little garrison held out, attacked in the end on all sides, ever dwindling in numbers, yet repulsing every assault with desperate courage. When at last their brave defence was broken through, the knights fell to a man, and all Christendom rang again with the story of their heroism.

The Turks next directed their assault against the forts on the other side of the Grand Harbour, and made smashing attacks by sea and land On one occasion they blew an enormous gap in the ramparts with a mine, and only by the coolness of La Valette, who rushed to the head of his men and, inspiring them with his own valour, drove the Turks back, was the situation saved. Week after week the bombardment went on, until the besieged became so few in number that they feared it would soon be impossible for them to continue holding the line of fortifications. The Turks, meanwhile, were laid low with sickness brought on by the burning wind, the sirocco, their food and military stores were failing, and their spirits on the wane. At length the long-promised reinforcements for the knights arrived from Sicily. The Turks made a last stand against them but were defeated, and returned to Turkey after having lost about twenty-five thousand men in a siege that had lasted four months, and the defence of which had made La Valette and his knights immortal.

After this successful defence of Malta, La Valette began the building of the city named after him and now the capital of the island, and many splendid palaces were raised at the expense of the order. Every fresh Grand Master added to the fortifications, so that by the eighteenth century Valletta had become one of the strongest fortresses in the world. As time went on, however, the accumulated wealth of the order led to its corruption and decay. The knights became slothful and quarrelsome. Many broke their oaths and offended different kings of Europe by enlisting in hostile armies, with the result that the estates of the order began to be confiscated in revenge So long as the knights were rich, the Maltese benefited by their presence in the island, but when their lands and wealth had been dissipated, they levied heavy taxes on the people of Malta, demanded their constant service, and treated them with contempt, so that gradually the country fell into a state of distress. In 1798 Napoleon sailed to Malta, having decided to capture and make use of it as a base for operations in connection with his intended conquest of the Near East He took possession of it with scarcely a struggle, expelled the knights and seized their treasures. The knights finally made Rome their headquarters, and the English branch of St. John of Jerusalem, descended from the ancient order, devotes itself nowadays to organising hospital and Red Cross work, and originated the St. John Ambulance Association which afforded valuable aid during the World Wars. Other branches of the order in Europe do similar work.

Napoleon left a general in command of an army of occupation in Malta, but his government soon aroused hostility. The Maltese rebelled and besieged the French for nearly two years in Valletta. Then Nelson, with Portuguese and Neapolitan allies, assisted the Maltese by blockading Valletta. The French surrendered, and soon afterwards a council of representatives of the Maltese people ceded Malta and its dependencies to Great Britain. At the Peace of Amiens (1802) a promise was made to restore the island to the knights, but this proved contrary to the wishes of the people, and after a further outbreak of hostilities between Britain and France, Malta was finally granted to the British Crown at the Treaty of Paris in 1814.

Thus Malta became a member of the Empire neither by colonisation nor conquest. The island was ceded on condition that the national laws, customs, privileges and religion should be preserved. Soon afterwards an agitation began for self-government and

this Malta now enjoys. Disputes frequently arise over internal grievances, but in spite of these the Maltese have remained loyal to the British union. This was exemplified in the Second World War when the people heroically and successfully resisted devastating attacks by German and Italian aircraft For their courage and devotion the island was invested with the supreme civilian honour, the George Cross, a memorable and unique award in the history of the British Empire.

Aden.—Aden is a seaport and air base in the south-west of Arabia, a little more than a hundred miles distant from the straits of Bab-el-Mandeb at the southern extremity of the Red Sea It consists of the important seaport and settlement of Aden, and the district farther inland and along the coast called the Aden Protectorate, nine thousand square miles in area. The islands of Perim, at the southern entrance to the Red Sea, and of Kuria Muria and Socotra, are dependencies of Aden. Perim is provided with emergency stores of oil and coal for passing ships

The town of Aden is built in what appears to be the crater of an extinct volcano and stands on a barren, volcanic peninsula. The settlement, including Perim, has an area of eighty square miles. Aden, which is strongly fortified and also protected naturally by steep surrounding rocks, is the capital of this region. The peninsula is joined to the protectorate on the mainland by a sandy neck of low ground scarcely above sea level. On this isthmus are salt works consisting of large basins cut out in the sand and filled with sea water let in through floodgates at certain high tides. The water is left to evaporate, and leaves behind a layer of salt about eighty-four inches in depth, much of which is sent to Africa. Aden has a very hot, dry climate, subject to occasional spasmodic storms of rain, a year or more often elapsing between these storms. The rain is collected in great tanks excavated in the surrounding rocks; and supplies of fresh water are also obtained from the evaporation and condensation of sea water, from wells, and from an aqueduct seven miles long. The neighbourhood of Aden consists of rocky desert useless for agriculture, and consequently all food materials for the settlement have to be imported

Aden is a very important naval and commercial depôt, fortress and coaling station for the Peninsular and Oriental Steamship Company and for other vessels sailing to and from India. The construction of the Suez Canal added greatly to its value It is a wireless and cable station, and here the deep sea cables divide, running in one direction towards India, Australia and the Far East, and in another towards Zanzibar and the Cape of Good Hope. The trade of Aden lies largely in transhipment, but the port also has considerable commercial dealings with its Arabian hinterland, and the coast of Somaliland, on the opposite shore of the Red Sea. Its commodious inner harbour on the western side of the peninsula has been dredged to a minimum depth of thirty feet, and is visited every year by over a thousand steamers Aden's exports and imports are practically the same—coffee, sugar, gums, tobacco, grain, hides, cotton piece goods, petrol, coal and cotton yarn

Owing to its defensible character and its position on the highway from Europe to Asia, Aden became a place of importance in very early times Under the name of *Arabia Felix* it belonged to the Romans The Portuguese made an ineffectual effort to conquer it in 1513, and in 1538 it was captured by the Turks who, under Solyman the Magnificent, converted it into a fortress For two hundred years it was the cause of quarrels between different rulers, and in 1735 the Arab sultan of the State of Lahej took possession of it. As time went on, the Arabs on several occasions seized opportunities of violently plundering British vessels, and in 1837 cruelly illtreated the passengers and crew of a ship wrecked off Aden As a result, the government obtained an agreement from the sultan of Lahej to compensate the aggrieved persons and to sell Aden to Britain The sultan's son afterwards

refused to comply with the terms, and in 1839 a British fleet and army conquered Aden and annexed it to British India.

At the time of capture the population of Aden numbered under one thousand. Now it is estimated at nearly fifty thousand, and Aden has become of incalculable value as an outpost of the British Empire.

British possessions in the East Indies.—Between Asia and Australia lie the East Indies, of which British Malaya and British Borneo belong to the Empire British Malaya is the southern part of a long peninsula in south-east Asia. Granite mountain ranges run down the middle of it, and fertile plains lie on either side. The western coast is called the Straits Settlements, and this British colony includes the islands of Penang and Singapore. The Class Picture, No. 74 in the portfolio, shows something of the busy port of Georgetown, in Penang. Still more important is Singapore, on the island of the same name, which is separated from the Malay Peninsula by a strait less than a mile wide.

The East Indies lie on the equator and are hot, wet forest lands Many parts are covered with dense jungle in which snakes and tigers lurk Yet in British Malaya thousands of people—white, brown and yellow—have made their homes. What can have drawn them to such a dangerous part of the world?

Tin.—For hundreds of years Malaya has been famous for its tin mines, which supply more than half of the world's tin It is found in the western plains as a powder mixed with the soil which has been washed down by heavy rains from the granite mountains inland. The tin miners of Malaya are Chinese. Long ago numbers of Chinese left their native land and "braved the poisonous darts of lurking savages, the perils of tigers, snakes and fever, to clear away the jungle and dig the tin that put Malaya on the map of the trading world." Through their courage and hard work they became rich and powerful in the country, and many Chinese now own mansions in Singapore.

Some of the tin is obtained by digging in deep mines with *changkols*—tools like hoes. The earth which is dug out by Chinese is put into flat baskets which are hung on either side of a pole carried on the shoulder When their baskets are full the workers walk with them to the surface up a long log of timber notched in the form of steps. Another method of lifting the earth is to heap it into trucks which run on rails to the upper level of the ground Here it is mixed with water and washed down to sloping vats, where the light tin ore is caught and the heavier material settles at the bottom Sometimes the soil is broken up by powerful jets of water which are pumped on it, and the mud formed is sucked up by machinery or caught in buckets joined together by a chain. The buckets go round like a great wheel. In turning they scrape on the bottom of the mine, fill themselves with earth and carry it up to a hopper at the top The Chinese work in large sun hats.

Tin is used for coating the cans in which meat, fruit and fish are preserved, as well as for the manufacture of printing type and articles of pewter, gunmetal, bronze and tin-plate

Rubber—Even more important than its tin mines to-day are Malaya's great rubber plantations. At one time all the world's rubber came from wild rubber trees in the hot, wet forests of America. Sixty years ago an Englishman, who had made a study of these trees in Brazil, told his friends that rubber plants could be cultivated, and would grow very well in the East Indies Most people laughed at his ideas, so he determined to make experiments for himself. He collected some wild rubber seeds scattered from the trees, and planted them in a piece of ground adjoining the house in Brazil where he was living at the time. Then he wrote a book about his plans, and drew pictures in it of the leaves and seeds of the rubber tree. This book was read by the director of Kew Gardens, in London, who was interested in it at once He wrote to the author asking him to obtain a large

number of wild rubber seeds. The heavy, oily seeds in their dappled skins were collected, carefully packed in cane crates, and carried over the sea to Kew Gardens. In a fortnight after their arrival three thousand baby rubber plants had sprung up in the glasshouses at Kew.

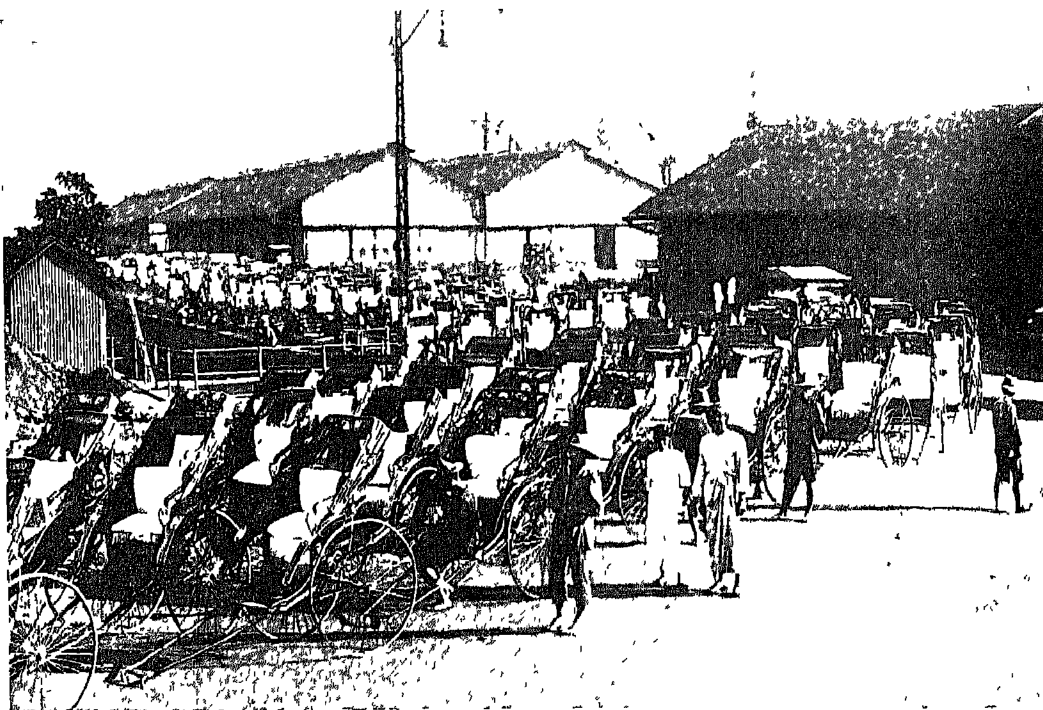
Some of the plants were sent to Ceylon, others to Singapore, and in four years' time they were yielding seed for new plants. At first plantation owners would have nothing to do with them, thinking that they would not be profitable But after a time coffee planters in British Malaya found that their sales were going down, and in despair they rooted up their coffee trees and planted rubber seedlings instead. This took place about fifty years ago. The Malaya planters had a hard struggle for life during the five years that the young plants took to mature. At last they were ready for tapping, and cultivated rubber was sent to the London market. Then came the rise of the motor industry. Motor cars were wanted for trade and for carrying people from place to place. The motor cars and 'buses, however, needed rubber tyres, and the rubber for sale was now bought as fast as it could be manufactured Its price went up by leaps and bounds. Plantations were started in Ceylon, and great stretches of jungle were cleared in British Malaya and Borneo. The men who had for so long persevered with their rubber trees now made large fortunes. To-day Malaya is the biggest rubber-producing country in the world. What a wonderful achievement!

The story of rubber making has been told in Volume I., page 464, and there is little to add to it. In Malaya, the native Malays, who are good woodcutters, help first to clear the jungle. They cut away the undergrowth, fell the trees, and then set the wood on fire. Afterwards they uproot stumps and clear the land of charred wood. Young rubber trees are then planted by natives under the guidance of four or five white men, assistants to the manager or planter of the estate The white men live together in a bungalow, and the people of colour—Indians, Malays and Chinese—live in well-kept villages of thatched houses often built high off the ground Many of the men now wear cotton shirts and loose trousers or shorts in the European manner, while the women prefer brightly coloured draperies and gay ornaments

The rubber factories are small buildings with corrugated iron roofs. Each estate has its own, containing the pans in which the "milk" is curdled with acid, and the machines, rather like mangles, which tear up the lumps of rubber, press the pieces together again and roll them into strips. All the strips are white until they have been in the smoking room, which has a perforated zinc floor under which a big fire is burning up coconut shells and making clouds of smoke. The smoke creeps into the room through the holes in the floor and turns the rubber brown. Very dark brown, well-cured rubber fetches the highest price in the market

Packing cases of rubber from the Malay plantations travel to Singapore by river boats with thatched roofs, bullock carts, motor lorries and also by train. At Singapore they are taken on board steamships, and when they reach the factories of western lands the sheets of rubber are made into articles used in the streets, in homes, in hospitals, in factories, in sports and in travel.

Rattans.—The great, hot forests of Malaya and Borneo are full of spiny, climbing canes called *rattans*, which grow sometimes two hundred yards long They loop from tree to tree, and entwine in thorny thickets through which no man or animal can pass Natives cut the flexible stems and collect the canes in bundles They are strong and light, and make excellent furniture, baskets, mats and walking sticks. The framework of Malayan huts is made of rattans, and cane chairs and mats are found in all the bungalows Rattan mats made by the Dyaks have beautiful smooth surfaces that are easily kept clean, and are cooler than linen to sleep on during hot nights To straighten



(Reproduced by courtesy of C.P.R.

RICKSHAWS AT SINGAPORE

the canes they are bent round posts At Singapore they are cleaned and sent away in thousands to France and Germany Thousands more are made into goods in Singapore workshops. Very fine rattans are used by natives in place of rope and string.

Pineapples.—We are all familiar with the tinned fruit known as Singapore pines which is to be found in every grocer's shop. This indicates that in Malaya and the adjacent areas the cultivation of pineapples must be an important occupation of the native peoples. The export has now reached over seventy thousand tons a year, and a very large part of this goes to the United Kingdom

The great development in the cultivation of pineapples must be attributed to the suitability of the climate and soil and to the abundant steady supply of cheap native labour. Pineapples will grow on most tropical soils provided that they are well-drained and have a fairly heavy rainfall Cultivation takes the form of obtaining suckers from the base of the fruit and planting them in the plantations in rows five feet apart. About three thousand plants can be grown in an acre of ground Usually they begin to bear fruit after about eighteen months from planting and continue to yield for about six years. After that time replanting becomes necessary. The plantations are mainly worked by Chinese labour, and the packing industry is also in the hands of the Chinese.

After the fruit is cut during the months of May and June, or November and December, it is taken to the factories, where it is graded and cut into whatever form is desired, either cubes or rings. It is then placed into tins with sugar syrup. The tins are soldered, and placed in boiling water for ten minutes or more. On being taken from the water the tins are punctured to allow the escape of steam, and are then resoldered and plunged



[Reproduced by courtesy of C P R.

SAMPANS ON RIVER, SINGAPORE

again into boiling water for a short time. This completes the preparation, and they are then ready for packing and export

Singapore.—A traveller on a liner which drops anchor at Singapore may well think that through some mistake he has been brought to China instead of the Straits Settlements The quay is thronged with Chinamen, or "boys" as they are called when they belong to the working class, no matter what their ages may be A "boy" makes off with the luggage and piles it on a rickshaw. Then away goes the traveller jog-trotting through the streets "in a sort of invalid chair with a picturesque, yellow-skinned ragamuffin in the shafts" Every street is crowded with Chinese men, women and children; shops display Chinese goods; Chinese signs are over the doors and Chinese lanterns light the way at night.

Then as the traveller enters a wide, main road he passes into quite different surroundings. The rickshaw has to dodge motors and trams There are English shops and houses and English faces, and the English language is spoken Passing one another in the road are English, Malays and Chinese, in about equal numbers. A day's journey out from Singapore into the Malay Peninsula shows the country highly cultivated for rubber. A railway runs through its midst, and splendid roads lead inland. Behind all rises "a wall of jungle." It is clear that though the Straits Settlements are inhabited mainly by Eastern peoples, English men and English money have developed them

The port of Singapore is called "The Gate of the East," because of its commanding position on the great trade route to the Far East. It is also the world's "Halfway House" Lying midway between West and East, between India and Australia, between the Indian Ocean and the Pacific, it has become one of the greatest trading centres in the world Thousands of coasting ships which collect goods from all the islands of

the East Indies can anchor in its splendid harbour while waiting to unload at the long line of quays; and ocean liners lie at anchor opposite the extensive docks. Chinese junks bringing cargoes of rice pass by steamers which are being loaded with pepper, spices and rattans for Australia. Three or four British warships are always in the harbour, for Singapore is the Empire's most important naval and military station in the Far East, and is strongly fortified. In the warehouses at Singapore produce from all parts of the world may be found; and besides being a trading centre the port is a coaling station, drawing its supplies of coal from the island of Labuan off north-west Borneo.

The whole of the island of Singapore was once jungle, most of which has now been cleared. Plantations of pineapples are grown, and the fruit is canned at Singapore by the Chinese. Chinese peasants also do the work in the pineapple fields Some of them live in *sampans*, or houseboats, on the river The Malays are not fond of doing regular work. They are quite pleased to make a clearing for the planter, for that job will soon come to an end and bring in enough money to allow of a long spell of idleness. A Malay grows a little rice, a few coconuts, and nets the fish he needs. One hour's work a day will keep him and his family. For the rest of the time he prefers to laze in the sun. Yet he is not a savage He has his own style of dress and can do beautiful metalwork. Occasionally, in Singapore, shops will show gold and silver hair ornaments, buckles, scent bottles, dagger sheaths and carvings in ivory delicately made by Malays. The miners, farmers and shopkeepers of Malaya and Singapore are Chinamen. In the schools of Singapore little Malays, Indians and Chinese are taught side by side, and all learn to understand English

Handwork (Malaya).—The model of the sampan is planned on a rectangular base. This long, narrow base, as shown in Fig. 1B, is drawn first; care must be taken to ensure that the children do not make it too wide, for this will spoil the proportion of the finished model. The lines XX and YY are then drawn as shown in the plate, and the smaller rectangle thus marked off forms the actual base of the boat. Using a piece of paper as a measure, the length XY is transferred to a sheet of drawing paper, upon which one of the sides of the boat is built up, using XY as the base. The shape of the side of the boat is shown in Fig. 1A, the prow being made rather longer than the stern. When complete, the shape is cut out in paper and used as a pattern, by means of which two symmetrical sides are drawn at XY on the sides of the plan The lengths of the curves XA and YB must then be measured by means of a piece of paper, and the distance marked off on the corresponding ends of the rectangle. At the prow, about ¾ in. of the rectangle is added for bending over.

Small triangular fixing flaps are now added in the positions shown in the figure. The inner rectangle XY,YX is scored, and the sides are bent upwards to the vertical position. Next, the extending ends of the rectangle are stuck to the lower edges of the curved sides by means of the triangular flaps. Fig 1C shows how the portion left is bent over to complete the end of the prow. The curved shelter under which the family lives is simply a rectangle of card bent over to form a semi-circular shape which is stuck to the inner sides of the boat A fitting for the mast is made from a piece of card bent as in Fig. 1D The mast, which may be a kindergarten stick or a meat skewer, is stuck through the middle of the bent card into a slice of cork glued to the bottom of the boat, Fig. 1E. To complete the sampan, a sail is fixed to the mast, and rigging is added with needle and thread. The curved shelter is thatched by sticking strands of brown raffia to it; and the whole is then painted in yellow and brown.

Fig. 2 shows a cut-out of a native of Malay collecting rubber. He is painted brown and white, the tree should be a

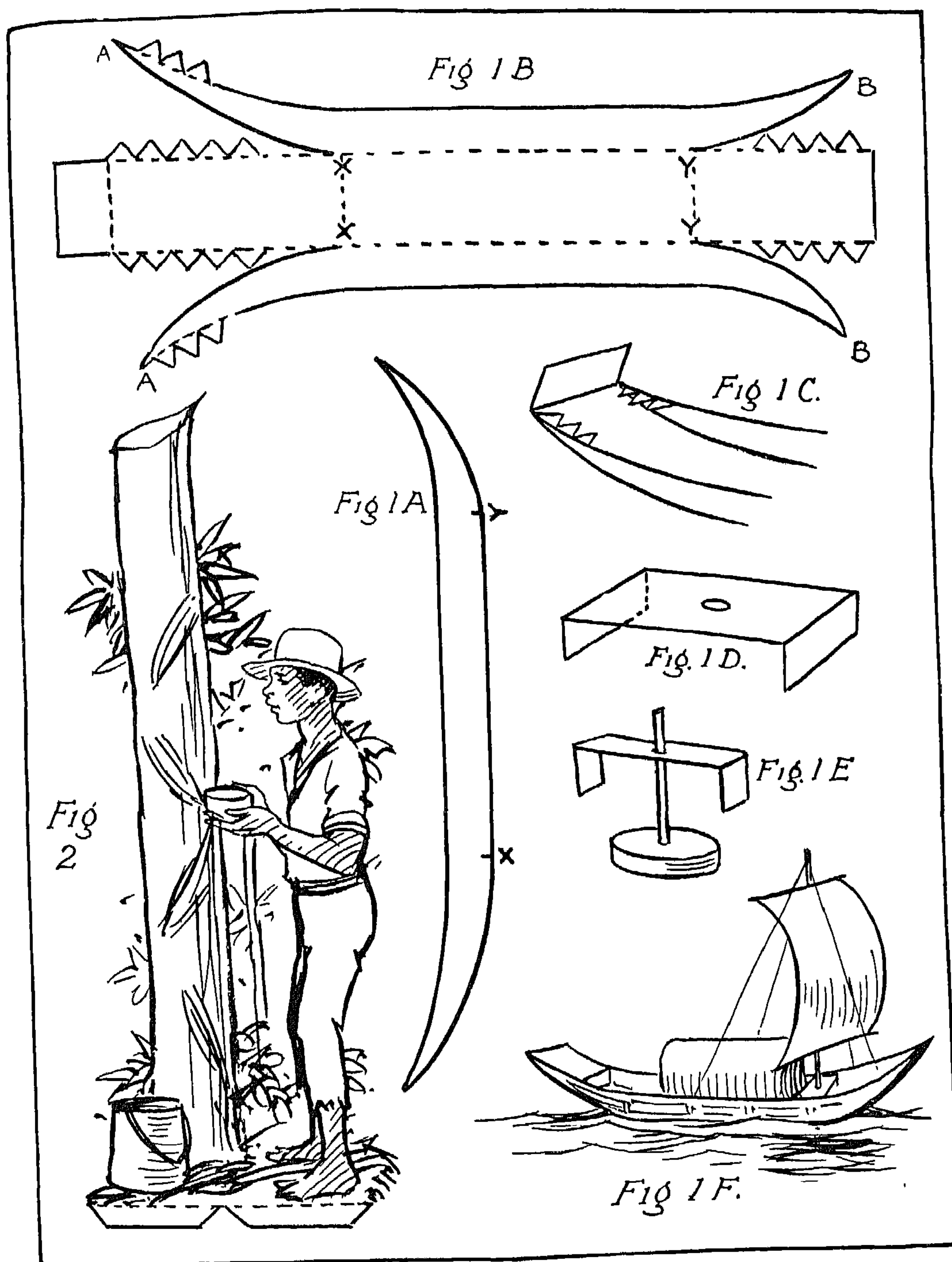


FIG 1 MALAY SAMPAN IN THIN CARD OR STOUT PAPER
FIG 2 CUT-OUT—NATIVE COLLECTING RUBBER



[Reproduced by courtesy of C P R

HONG KONG

greenish brown with yellow incisions, and the vessels should be white.

Hong Kong.—The island of Hong Kong lies near the estuary of the Canton river and off the coast of the province of Kwangtung, in southern China. It is the eastern outpost of the Empire, and ten thousand miles distant from London. Besides the island of Hong Kong itself, the neighbouring district of Kowloon, on the mainland, also belongs to the British Empire, and the peninsula called Kowloon Extension, south of a line drawn from Deep Bay to Mirs Bay, was granted in 1898 under lease by China for ninety-nine years. The total area of the colony is three hundred and ninety-one square miles.

Hong Kong became a British possession by the treaty of Nanking in 1842. Prior to that date the island was used as a fishing station by the Chinese. In 1839, however, the British residents in Canton were expelled and took refuge in Hong Kong. A fight between British and Chinese sailors on the island resulted in the death of one of the Chinese, and war between Britain and China was declared. The British forces made Hong Kong their headquarters, took public possession of it in 1841, and retained it by the terms of the treaty.

The English settled mainly on the northern coast of Hong Kong, and here grew up the city of Victoria, now the capital of the island and one of the most beautiful cities of the East. Victoria has a magnificent harbour whose sheltered waters lie between the island and the mainland. It is the fifth harbour of the Empire, and contains ten square miles of water. Victoria is the

headquarters of the British China fleet, and also an important commercial port In the harbour may be seen all kinds of ships, from Chinese junks, with their palm-leaf sails, to merchantmen and great trans-Pacific liners.

The port has an enormous entrepot trade. Half of the imports of China are brought into its docks, and cargoes from Europe, Australia, India and Japan are stored in its warehouses. The scents of sweet-smelling commodities such as camphor pervade the atmosphere Rising in terraces from the shore to the summit of Victoria Peak, which overlooks the city and harbour, are white houses half-hidden in luxuriant foliage and spangled at night-time with myriad lights. In the city are barracks, cement, cotton and sugar factories, ship-building yards, engineering works, a university, granite roads and spacious parks Three-quarters of the population of nearly half a million are Chinese, most of whom wear their hair cut to the shape of their heads after the fashion of Europeans, and also dress in the European style. The Chinese women are attired in black trousers and white jackets. The streets running alongside the seacoast are quite level, and long, steep flights of steps join them to the terraces rising high behind.

Hong Kong is a rocky island. Victoria Peak, nearly 2,000 feet high, may be approached by electric tram, and in the Peak district live many Europeans amid healthy surroundings. At the lower levels, where the air is hot and damp, the Chinese houses are closely packed together and insanitary conditions for the most part prevail High up on the side of Victoria Peak is a racecourse, and waters sparkle and leap over the rocks

Inland the island is wild, lonely and mountainous. Decaying vegetation borders the streams, and the dreary valleys are separated from each other by chains of treeless granite hills from which building stone is quarried. Along the coast are small rice fields and yam and potato patches, but no other parts of Hong Kong are cultivated, although orange, pear and mango trees grow wild. Termites, or white ants, abound and constitute a serious nuisance owing to their habit of eating into the wood of buildings. There are also several species of poisonous snakes, some land tortoises and armadilloes, but otherwise the island is peculiarly void of animal life.

Kowloon is also mountainous, but its valleys are wider, and more fertile, and produce crops of rice, sugar cane, vegetables, hemp and indigo

Hong Kong is a Crown colony, under the control of a governor and a council partly elected and partly nominated

Handwork (Burma and Ceylon).—In this lesson the children may add another model of a dwelling to their collection

For the making of the Burmese house some thin cardboard and a number of twigs will be required A large sheet of card to act as a base is first cut, and a house shape is fixed to the base so that it stands well back The house is made rather low, and is fitted with a roof that will overhang some distance from the walls. When the house is secure, holes are punched at regular intervals round the edge of the base, and short twigs of about the same length are stuck through the holes. Four more holes are punched at each side of the house, as seen in Fig 1A, through these holes longer sticks are used as supports for the eaves of the roof. These sticks are fixed at the top by pushing them into holes made for them in the roof.

At one end of the house there is an extension of the dwelling with a sloping roof. The plan of the extension is shown in Fig 1B. The children should first draw the middle rectangular portion and add the sloping sides to the figure. The work of planning would be simplified by drawing the figure on 1 in. squared paper. Note specially that the length of the sides of the top part must be the same as that of the dotted sloping sides The completed outhouse is stuck to the end of the dwelling Above the door of the house, which may be

either cut out or painted on in dark colour, is a fringed awning. This awning (Fig. 1C), is a straight strip of card, fringed with the scissors, and stuck bodily to the walls of the house. Two similar strips are cut and fixed from the ends of the awning to the walls. The house is now practically complete, and should be tinted with water colours—orange, yellow and brown. When the paint is quite dry, the roofs are given a liberal dressing of adhesive, and strands of straw and raffia are stuck on. The base is sprinkled with sand and strewn with pieces of straw and raffia, as shown in Fig 1D.

The boats of Ceylon and the southern coasts of India have characteristic outriggers. These are heavy masses of timber carried by rods in a position parallel to the line of the boat. They help the boat to preserve its equilibrium in rough waters. The next model is that of an outrigger boat The plan of the boat is shown in Fig. 2A; it is based on a diamond-shaped outline, and the sides are cut from paper patterns as described in former lessons In fixing up, the curved ends are stuck together and the two triangular flaps hold the middle of the sides together. Two circular holes are made on the left-hand side of the boat, and through these two twigs are thrust. Any tendency on the part of the twigs to wobble may be prevented by sticking a pellet of plasticine over the portions projecting into the boat. Next (Fig. 2B), a clay outrigger is modelled and fixed to the far ends of these twigs. Two lengths of pulp cane, thrust into a cork stuck inside the boat, a paper or material sail, and rigging, complete the model. Fig. 3 shows a cut-out of a tea picker The dress is tinted red and yellow, the basket orange, and the plant dark green.

The West Indies.—The islands of the West Indies form a chain stretching in a semicircle from Florida to Venezuela in South America. They are almost entirely within the tropics, and the British islands in the group, with the exception of the Bahamas, all lie between 10° and 20° north latitude.

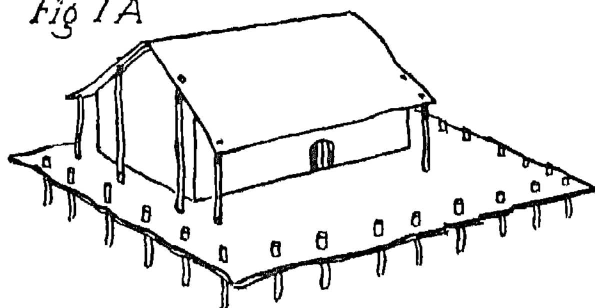
With the exception of the Bahamas and Barbados the islands are exceedingly mountainous, and some are practically volcanic peaks. The British islands vary greatly in size as is indicated in the following table which includes the most important.

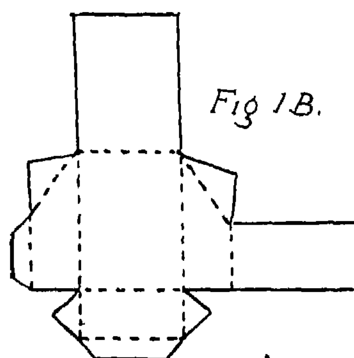
Island	*Area*	*Population*
Jamaica .	4,450 sq. miles ..	974,742 (14,476 white)
Trinidad	1,862 ,, ,,	365,913
Dominica .	305 ,, ,,	37,059
St. Lucia .	233 ,, ,,	56,917
Barbados .	166 ,, ,,	156,312
St. Vincent	150 ,, ,,	51,426
Grenada ..	133 ,, ,, ..	66,302
Antigua	108 ,, ,, ..	29,767
St. Kitts	65 ,, ,,	} 38,214
Nevis .	50 ,, ,,	
Anguilla .	35 ,, ,,	
Montserrat	32 ,, ,, ..	12,120
Bahamas	4,404 ,, ,, .	53,031

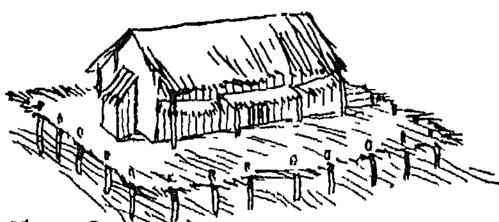
Climate.—The islands are scattered over a wide area and the conditions affecting the climate vary from place to place. The chief characteristics in most parts, however, are a high mean annual temperature and a heavy rainfall In high regions of the islands lower temperatures prevail and, on windward slopes, the wettest regions are to be found. Thus, in Jamaica, Kingston, which is on the coast, has a mean annual temperature of about 78° F., but in the Blue Mountains of the interior a cool and delightful climate is experienced. The mean annual range at Kingston is only about 6° F. In the low lands the mean rainfall is about 35 in., but on the northern slopes of the Blue Mountains a fall of as much as 196 in. is experienced.

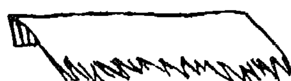
Barbados is in the full track of the north-east trade winds, and these invigorating winds promote very healthy conditions. The early part of the year is dry and cool but the middle of the year is wet The average rainfall is about 65 in The mean temperature is 78° F , and the annual range is only 4° F

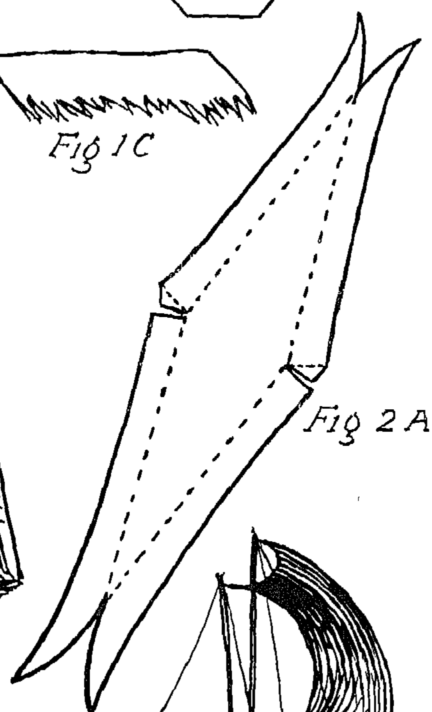
MODELS FOR THE HANDWORK LESSON













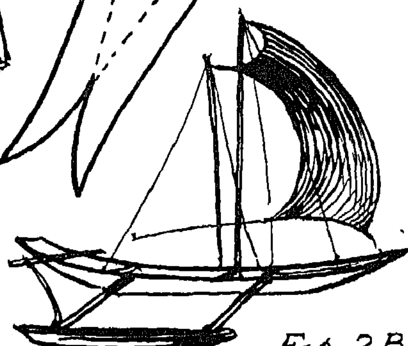


FIG 1 BURMESE HOUSE IN THIN CARD, STICKS AND RAFFIA
FIG 2 OUTRIGGER BOAT OF COLOMBO IN THIN CARD
FIG 3 CUT-OUT OF A TEA PICKER

Throughout the island therefore a high mean annual temperature prevails. Considering the tropical position the climate is pleasant, but the great drawback is the liability to serious hurricanes. These violent storms sweep over the islands from east to west and work great destruction They are particularly prevalent during August, September and October, but rarely occur during the first four months of the year

The Bahamas, which lie outside the tropics, have a delightful winter climate, and are visited by numerous tourists from the United States during the winter months

Vegetation.—The low coastal plains of most of the islands were originally covered with luxuriant tropical vegetation Much of this has been wiped out and plantations have been substituted; but there are still considerable areas of the original tropical growth. Mangroves are a conspicuous feature of wet coastal shores, and useful cabinet and other tropical timbers are found in the forests farther inland. Ferns are numerous in the forest areas, and orchids are of great variety. There are numerous flowering trees and shrubs, palms and bamboos.

A remarkable feature of the flora of the West Indies is the great variety of introduced plants which flourish. It may be said that the commercial prosperity of the islands is based upon a collection of valuable plants which have been brought to the region from other lands. Bananas were introduced into the islands from the Canaries by Columbus. The sugar cane was first brought to the area by the Spaniards, but another variety was introduced from the South Seas by the English towards the close of the eighteenth century. Coffee, cocoa, guinea-grass, oranges and lemons have each been brought to the West Indies from other lands. The only native plant of commercial value in Jamaica is the pimento.

Agriculture is the chief occupation of the people in the West Indies and, as in other tropical lands, it is plantation work carried on by native peoples In the early days the prosperity of the industry was brought about by the use of slaves from Africa, and there is to-day abundant evidence of the Negroes who were brought to the islands. When Columbus discovered the West Indian islands he found in them two aboriginal races, the Caribs and the Arawaks. The Spanish colonists practically exterminated the Caribs, and it was to find labourers to take their places that the Negroes were brought to the islands In the eighteenth century the slave trade was at its height, and the merchants of London, Bristol and Liverpool grew rich because of it. In 1768, for instance, ninety-seven thousand Africans were sold in West Indian slave markets, and during the course of the eighteenth century it is estimated that two million, one hundred thousand slaves were carried from Africa to the West Indies. In 1838 all slaves on English territory were set free, but this practically ruined West Indian agriculture Sugar, rum, coffee and cotton were the mainstay of the islands, and the release of the slaves almost stopped the production of these products.

In all the islands the coconut palm grows freely and the preparation of copra is an industry which is increasing in importance. The usual tropical fruits—bananas, mangoes, pineapples, guavas, pawpaws—grow everywhere and form an important part of the food of the natives. Hurricanes, which frequently destroy these food crops, reduce the people to starvation. They live mainly on what they grow, and a hurricane not only wipes away their dwellings, it also blows their food away

Sweet potatoes and yams are the chief vegetables grown, but European plants such as tomatoes flourish in many of the islands.

Jamaica.—Jamaica is the third island in size in the West Indies, being only exceeded by Cuba and Hispaniola. It is very mountainous, the Blue Mountain range containing eight points with a higher elevation than 4,000 feet. Blue Mountain Peak has an altitude of 7,360 feet On the coastal borders there are extensive plains.

Jamaica was the scene of Columbus's longest residence in the West Indies The Spaniards during their period of occupation of the island destroyed almost all the natives The introduction of African Negroes to supply labour for the plantations which were established has left its mark on the population to-day More than seventy per cent of the people are black, and more than fifteen per cent are coloured (mixture of black and white). Thus the people of African origin form the bulk of the population and their numbers are on the increase.

The Negroes of Jamaica have the characteristic light-hearted nature of their stock in Africa. They are improvident and usually spend money as quickly as they get it. An extreme childishness and excessive belief in witchcraft and superstition are also typical characteristics They are very musical and sing at work and at play. Their sense of rhythm is wonderfully developed, and this, no doubt, is due to their fondness for the drum. "Digging sings," with which they enliven their work, have a peculiar character. A leader sings a short phrase, and the others reply in chorus in a much shorter one. The repetition of this over and over again excites them and they work with a will They are also passionately fond of dancing. Whatever other instruments are used a drum is an essential one.

The flute is the wind instrument used, and it is made from the hollow branches of the trumpet trees. It is nearly a yard in length. "Fiddles," like the banjo and guitar, made of gourds hollowed out and provided with two strings, are in common use The tendency now is for the instruments used in all civilised countries to replace the earlier kinds

An excellent feature of the Negro's character is his respect for law and order. In no country in the world can women and children walk about unprotected with less fear of molestation They are also loyal to their employers and show great kindness to each other They still sleep in overcrowded huts with little ventilation and pay too little attention to personal hygiene. Their dwellings usually consist of a one-roomed thatched building, but when it is remembered that only a century ago they were abject slaves, treated like oxen, and driven to their work with the whip, it is a matter of surprise that they are as advanced as they are now.

From the earliest days of the settlement by Europeans the crafts practised by the inhabitants have been mainly connected with carved coconuts and carved tortoiseshell (the shell of the hawksbill turtle). Both the coconut and tortoiseshell are hard to work, and the latter is now the favourite material used Tortoiseshell combs for the hair have for centuries been worn by Spanish ladies, and many of these are of Jamaican origin. Silver-mounted cases of carved shell are a favourite article of manufacture

Hand baskets of all sizes and shapes are made of palmetto, banana bark and bamboo, and are coloured by means of anatta and other dyes Hats, known locally as *jipi-japa*, are made from leaves, and resemble the so-called Panama hats.

Bananas.—Jamaica has advantages over every country in the world for banana cultivation Bananas require heat, moisture and a rich soil, and Jamaica has these in all the coastal districts The island also has an abundant supply of cheap labour in the Negro population The plant has underground stems from which groups of leaves arise On appearing from the ground these, rolled concentrically round one another, form a kind of hollow stem which grows to a height of about eighteen feet. From the crown of this leaf sheath the blades spread out like palm leaves, each being from six to ten feet in length From the axis the blades emerge and, bending downwards, bear the flowers from which the fruit develops The clusters of fruit are finally very heavy and weigh as much as half a hundredweight. In areas suitable for the plant very little cultivation is necessary, and propagation is effected by separating leaf stems which emerge from the ground.



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CUTTING BANANAS IN JAMAICA

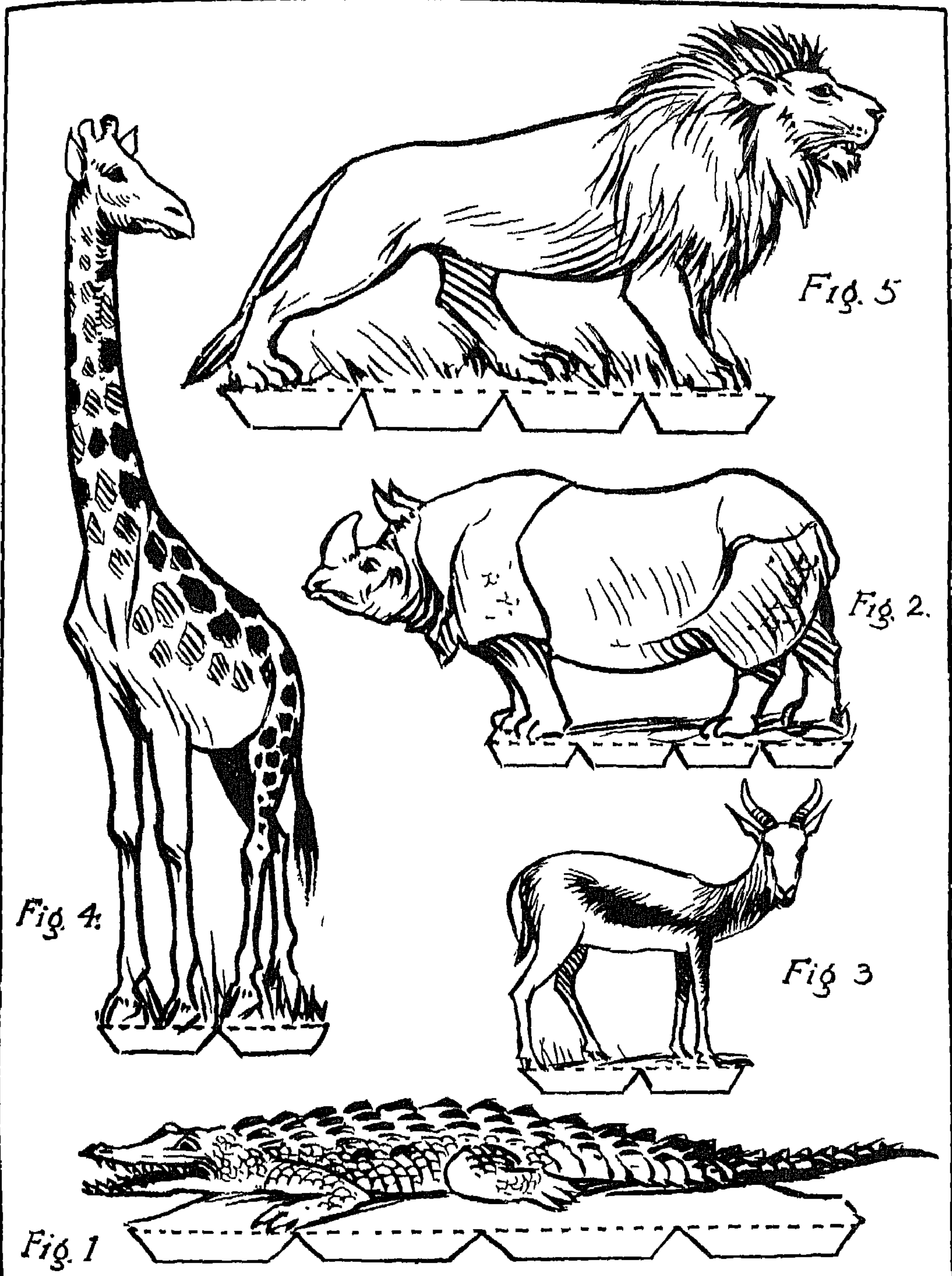
The fruit is gathered green and is allowed to ripen during the voyage or after reaching its final destination There is a great amount of wastage, and it is a common practice for the natives to carry a large amount of fruit out to sea in specially built small boats and dump it into the ocean Unless perfectly sound fruit at the correct stage of ripening is shipped a whole cargo may be unfit for sale. In the areas where it is grown the banana is an important food among the native peoples.

Ginger—Ginger, in the shops of the world, is generally labelled "Jamaica Ginger," not because all the ginger of the world is grown in the island but for the reason that Jamaica ginger is the best in the world It can be grown only in certain localities, and requires a cool, equable temperature, a regular rainfall, an elevation of over 2,000 feet and a rich soil. Such conditions are found in the central districts of the island.

Oranges.—Oranges can be grown in nearly every part of Jamaica They appear to grow without any kind of cultivation or care; anywhere the seeds are thrown they grow rapidly and produce good fruit

Pimento—This is a spice known as "Jamaica Pepper" and "Allspice." The tree from which it is obtained grows to a height of about thirty to forty feet, and has a base circumference of about three feet The leaves are a dark and very glossy green, and the tree has a striking greenish-grey bark.

Cassava.—The cassava plant is one of the very important food plants of the tropics, and there is no plant which can provide a greater abundance of food. In Jamaica the roots are converted into meal and finally into cakes of two well-known varieties The thick cakes known locally as "bammy" are a common article of food among the peasants. They are cheap, satisfying and highly nutritious The thin cakes, called "cassava



CUT-OUTS OF WILD ANIMALS

wafers," toasted and eaten hot with butter, are a delicacy with the white population. Many other foods can be prepared from the cassava plant, "grape nuts" being a well-known kind. Starch is also prepared from cassava

Tobacco—There are two types of tobacco grown in Jamaica, a high grade cigar type and a common variety known as "Creole"

Creole tobacco is cultivated entirely for local consumption and is grown in all parts of the island, invariably by the peasants. It is coarse in texture and is used principally for the manufacture of rope tobacco, known in the island as "Jackass Rope" Rope tobacco varies in size from one-half to one inch, and is made into coils from twenty-five to one hundred yards in length. It is sold by the yard, and the peasants cut it up for pipe smoking.

The cigar type is used in the manufacture of the well-known Jamaica cigars. About ten million of these are made each year.

Coffee.—The best and highest-priced coffee in the world is produced in Jamaica. It is known as "Blue Mountain" coffee. It is grown on the wet slopes of the mountains from which it derives its name at an altitude of from 2,000 to 4,000 feet.

THE TRANSMISSION OF NEWS THROUGH THE AGES

It is of much interest to follow the progress through the ages of man's endeavour rapidly to convey messages and news.

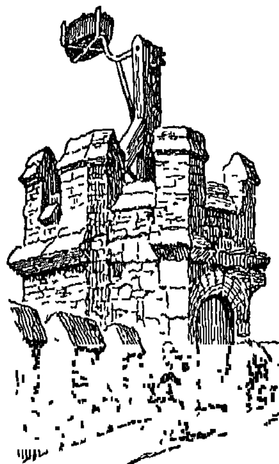
1 The Fiery Cross, charred with fire and dipped in blood, was carried from hand to hand by runners throughout old Scottish clans to summon all men to a rallying-place for sudden war.

2. A Harper, or gleeman, chanted the deeds of noted men in impromptu songs, relating the news as the Saxons sat at feast or rested at evening round their hall fires. Alfred the Great, disguised as a harper, boldly entered the Danish chief's camp, thereby learning his plan of battle.

3 A Pedlar, who travelled on foot from town to town, offering his wares for sale and conveying the latest gossip and news of the various places he had passed through

4. A Pilgrim of the thirteenth century, who travelled on foot to worship at some sacred shrine, such as that of St. Thomas at Canterbury or Our Lady of Walsingham. He carried a scrip, or purse, and a staff with a hook, to take his bundle If he had been on pilgrimage to the Holy Land, he was entitled to wear a piece of palm, and was called a palmer; the scallop shells in his hat showed that he had visited the shrine of St James at Compostella. During the Middle Ages the practice of pilgrimage was much abused, and a class arose no better than beggars, who led a wandering life and lived on charity the habit died down during the sixteenth century

5. A Beacon was frequently used to warn shipping on rocky coasts; the news of the coming of the Armada in 1588 was flashed through the country by the lighting of beacons on the highest points of land The illustration (5A) is a beacon set on a church tower.



5a

6. A Horseman carrying letters to a foreign post; this picture is from a design for a playing-card, 1684.



THE TRANSMISSION OF NEWS THROUGH THE AGES

7. The Newspaper Boy of modern times, who, until recent legislation put an end to the general practice, shrieked the latest news at street corners and railway approaches

8. A Modern Postman, the outcome of Mr. (afterwards Sir) Rowland Hill's great postal reform in 1837, when the Penny Post was introduced. On the average seventy-four letters are received yearly per head of the population; before the Penny Post the average was five

9. The Heliograph as used in the army for flashing signals by sunlight falling on a mirror The word means the *sun-writer*

10. The Mail Train that conveys bags of letters at sixty miles an hour from town to town.

11. A Mail Boat hoisting mail bags on board for conveyance to any part of the world.

12. A Carrier Pigeon bearing a message under the wing pigeons were used in the World Wars, from aeroplanes, ships, army headquarters, etc

13. Signalling Flags as used in the army and by scouts for making rapid signs which can be understood by those who know the code

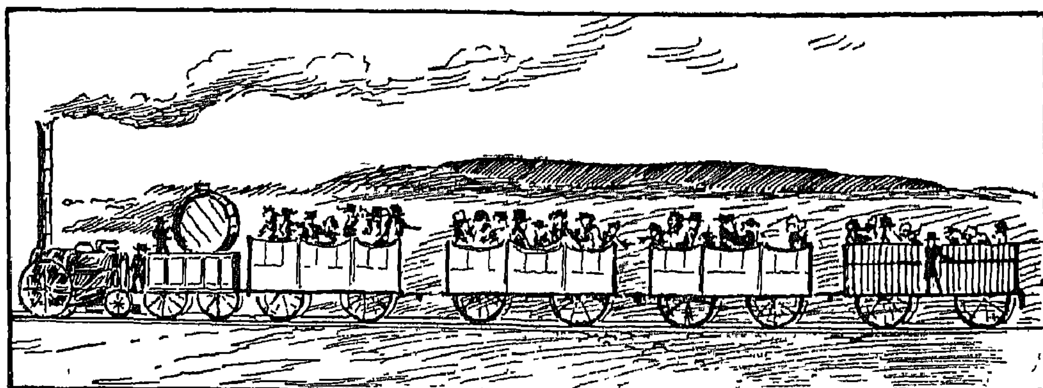
14. Telegraph Wires, along which electricity is conveyed to an apparatus which records a message. The word means the *distant-writer*. The telegraph came into use about 1840. By means of submarine cables, telegrams can be flashed to distant parts of the world.

15. The Telephone is an instrument for reproducing sound at a distance by means of electricity. The word means the *distant-speaker*

16. The Aeroplane, which is now used for carrying mails to all parts of the world.

17. The Wireless Telegraph, by means of which signals can be flashed through space to instruments many hundreds of miles away.

It is difficult to realise that at the beginning of the nineteenth century the transmission of passengers, goods, letters, or news was extremely difficult, slow, and expensive. Roads were bad, stage coaches slow, and railways unknown. The news of the Battle of Waterloo took three days to reach London, while to-day it would take less than three seconds. Improvements still continue to be made, it is now possible to speak to passengers on ships or aircraft hundreds of miles from land, by means of radar the position of distant unseen objects can be readily located and by television we can see in actual progress events happening many miles away. Millions of people daily "listen in" to the news, music and talks which are communicated by radio from Broadcasting Stations in all parts of the world.



LIVERPOOL AND MANCHESTER RAILWAY, 1830

REFERENCE NOTES FOR THE ENGLISH LESSON

Interesting Words

Ab'-i-gail, a waiting maid The name is derived from the Hebrew. Abigail, when speaking to King David, called herself "thine handmaid," and her name is now used colloquially for "waiting maid" or "servant"

ab-surd', foolish; inharmonious; against common sense. From the Latin *ab*, from, *surdus*, deaf, inaudible, harsh. Therefore anything absurd is like a reply from a deaf person who has gained only an imperfect hearing of what has been said, and whose answer is inappropriate

a-cad'-e-my, a school of a superior kind; a society of persons learned in some art or science. From *Akademia*, a grove at Athens in Greece where the philosopher Plato taught

a-dieu', farewell. From the French *à dieu*, meaning *I commend you to God.*

A-do'-nis (*-dō-*), a fine, spruce, young gentleman, a dandy. Adonis, a beautiful Greek youth, was a bold hunter, beloved by Venus Against the advice of the goddess Venus, Adonis continued his hunting pursuits, and at last received a mortal hurt from a wild boar he had wounded The tears shed by Venus at his death were changed into anemones, while the red drops from Adonis' side were transformed into red roses. Proserpine, queen of the underworld, restored him to life on condition that he spent six months with her and six months with Venus. His alternate return to and departure from earth correspond to the seasons of summer and winter.

ae-o'-li-an (*ē-ō-*), from Aeolia, a province of Ancient Greece, or from Aeolus (*e-o'-lus*), the Greek god of the wind An **Aeolian lyre** (or **harp**) is one which when placed at an open window is made to sound by the wind Aeolus ruled over the winds, and kept them prisoners in deep abysses, where they roared behind the gates of their caverns till it was the pleasure of Jupiter to release them

Aes-cu-la'-pi-an (*ēs-*), relating to Aesculapius, the Greek god of medicine, or to medicine itself

Aesculapius, son of Apollo and a mortal, was a prince famed for his skill in the healing art. He even once succeeded in restoring the dead to life This became known to Jupiter, who, jealous of Aesculapius, struck him dead. After death Aesculapius was worshipped as a demigod, and according to legend was the father of physicians

al'-pha-bet (*-fă-*), the letters of a language arranged in order. From *alpha* and *beta*, the first two letters of the Greek alphabet.

Am'-a-zon, one of a fabled race of female warriors; a tall, strong, or bold woman with masculine characteristics.

The Amazons were a nation of famous women who lived near the river Thermodon in Cappadocia They were governed by a queen, and performed duties which in other countries devolved upon men. All their lives were spent in manly exercises and wars. Hippolyta was among their famous queens.

am-bro'si-a (*-brō'-zhĭ-ă*), the food of the (Greek) gods. **am-bro'-si-al,** very fragrant

Ambrosia were festivals observed in honour of Bacchus in some cities in Greece. The food of the gods was called ambrosia, which signifies immortal It gave immortality to all who partook of it It was sweeter than honey, and it had the power of healing wounds. On account of its sweet perfume the gods used it on their hair.

Ar-ca'-di-an, of Arcadia, a rural district in Greece, rural, rustic, pastoral

Arcadia was a country in the middle of the Peloponnesus. Surrounded on every side by mountains, it may be looked upon as the Switzerland of Greece. It received its name from Arcas, son of Jupiter. The people were mostly shepherds who were skilful warriors, and passionately fond of music They worshipped the god Pan, who lived chiefly among them.

Ar'-gus, in Greek mythology a being with a hundred eyes. **Argus-eyed,** very vigilant or watchful.

Argus, surnamed *Panoptes*, "the all-seeing," because he had a hundred eyes, was a king of Argos. As only two of his hundred eyes were asleep at a time, he was set by Juno to watch Io (the moon), who had been changed into a cow by Jupiter; but Mercury, ordered by Jupiter, slew him by sending him to sleep by the sweet notes of his flute Juno, mourning for Argus, gathered up his eyes and put them on the tail of her favourite bird, the peacock.

as-ton'-ish, to surprise greatly; to amaze. The word comes through the Old French *estoner*, from the Latin *ex*, out, and *tonare*, to thunder.

Attic salt, refined wit Attica was the name given to Athens, the inhabitants of which place were renowned for their culture.

bac'-chan-á-li-an (-kan-), drunken (revels). Bacchic frenzy—drunken madness. From the Greek *Bacchus*, the god of wine

Bacchus (or Dionysus of the Greeks), the son of Jupiter, taught men the cultivation of the vine He was appointed god of wine and revelry, and had an important train of companions. Silenus (a satyr), his friend and tutor, first attended him; then followed nymphs, the Bacchantes (female revellers), satyrs, and shepherds. The Bacchanalia were great revels held in his honour.

bank'-rupt, one who is insolvent, or unable to pay what he owes From the Italian *banca*, a moneychanger's bench, and the Latin *ruptus*, broken. It is said that at Florence a bankrupt had his bench, or money table, broken.

bay'-o-net, a short spear at the end of a musket or rifle. The word is derived from *Bayonne*, the town in France where it was first made.

beef'-eater, one who eats another's *beef*, as his servant; a popular name for a yeoman of the royal guard Cf. the Anglo-Saxon *hlafaeta*, servant, properly a loaf-eater.

blan'-ket, a soft woollen covering for a bed. From Old French *blanquet*, *blanchet*, a white woollen stuff for garments.

Bo-he'-mi-an, of Bohemia. When it is applied to a person, especially an artist, it means one who leads an unsettled, wayward life, like a gypsy.

book, a collection of sheets of paper (or similar material), blank, written or printed on, bound together. The earliest "books" were writings scratched on pieces of beechen board, and the word book comes from the Anglo-Saxon word *boc*, a beech tree.

boy'-cott, to refuse to have dealings with. From Captain Boycott, a land agent in Mayo, Ireland, who was so treated in 1880

Bru'-in, a familiar name for the bear. The word comes from the Dutch *bruin*, meaning brown, and occurs in the "Reynard the Fox" legends.

cal'-i-co, a cloth made from cotton It is so-called because it was first imported from *Calicut* in India

cam'-bric (*cām*-), fine white linen, first made at *Cambray* in N. France.

ca-na'-ry, a small song-bird so-named from the *Canary* Islands.

can'-di-date, one who seeks or is proposed for an office or appointment From the Latin *candidus*, white At Rome persons who canvassed for office wore white robes.

can'-ni-bal, one who eats human flesh. This word is derived from the Spanish *canibal*, *caribal*, from varying native forms of the name of the Caribbees or Caribs. Columbus used the forms *Canibales* and *Caribes* for the people of Haiti

can'-ter, an easy gallop. The word is an abbreviation of *Canterbury*, and is supposed to have been the pace (a comfortable one) at which pilgrims rode to that city.

cash'-mere, a rich Indian shawl made from the wool of the *Cashmere* goat; also a fabric made from fine wool

Cer'-ber-us (*ser-*), Pluto's three-headed dog, was the keeper of the gate of hell His duty was to keep the inhabitants of hell from escaping, and also to prevent the curious from entering before they died.

> "There in state Old Cerberus sate,
> A three-headed dog, as cruel as Fate,
> Guarding the entrance, early and late"
> —SAXE.

It was usual for those heroes who visited the lower regions in their lifetime to appease the mouths of Cerberus by giving him a cake From this has arisen the saying, "A sop to Cerberus"

ce'-re-al (*se*), belonging to corn; a corn plant or its grain Derived from the Latin *ceres*, corn Ceres was the Roman goddess of corn and growing vegetation She was the daughter of Saturn and Vesta Proserpine, Ceres' daughter, was carried away by Pluto to the underworld While Ceres was searching for her the earth was neglected and became barren, to repair the loss which mankind had suffered by her absence, Ceres went to Attica and instructed Triptolemus in all the arts of agriculture, and commanded him to travel all over the world and impart this knowledge to mankind Eventually Proserpine was allowed to return to her mother for six months of the year, provided she spent the remaining time with Pluto as his queen.

chant'-i-cleer, a name given to the male of the domestic fowl. The name is derived from two Latin words, *canto*, I sing, and *clarus*, clear The cock is so-called from the loudness or clearness of his crowing

char'-wom-an, a woman who washes or cleans by the day or piece. The word comes from the Anglo-Saxon *cierr*, a turn or time

cher'-ry, a small stone-fruit, from the Latin *cerasus*, cherry tree.

chi'-na, porcelain ware; a fine kind of earthenware Porcelain was first brought from China, whence it derived its name

Cic-e-ro'-ni-an (*sis-*) **utterance,** extremely eloquent or polished speech Cicero was a great Roman orator and author.

Cir'-ce (*ser-se*), was a daughter of the Sun. She was celebrated for her knowledge of magic and venomous herbs Circe lived on the island of Acaea, and first feasted those who came there and then turned them into the forms of beasts by her magic. She detained Ulysses at her residence for a year, and changed all his followers to swine The phrase "the wiles of Circe," means beguilement with deceit or cunning.

co'-coa-nut properly **coco-nut,** the coconut palm The Portuguese and Spanish word *coco*, means a bugbear, an ugly mask to frighten children. It was given to the coconut on account of the monkeylike face at the base.

co-los'-sal, very large; gigantic From the Latin *colossus*, a large statue

The Colossus was a brazen statue at Rhodes, of the sun-god Helios, which was included among the seven wonders of the ancient world. It stood about 100 feet high at the entrance of the harbour It was completed in 280 B C, after twelve years' labour. It was partially demolished by an earthquake in 224 B C, and the ruins were sold by the Saracens to a Jewish merchant in A D. 672

Croe'-sus (*kre'-*) was a king of Lydia. He was exceedingly rich, and wished to be thought the happiest of mankind, but was told by the philosopher Solon of his mistake, and that poverty and domestic virtue were greater producers of happiness Hence, the saying "the wealth of Croesus" implies that riches alone cannot give a man happiness A Croesus is a person possessed of great wealth,

cur'-few, a bell anciently rung as a signal to cover or put out fires, extinguish lights. and retire to rest; an evening bell The name is derived from the French *couvre-feu*, cover-fire

cur'-rant, a small, dried grape, the fruit of certain garden bushes The name is a corruption of the word Corinth, from which city of Greece currants were first imported.

Cy'-clops (*sī-*), one of a fabled race of one-eyed giants **cy-clo-pe'-an,** of the Cyclops; gigantic

The Cyclopes, three monstrous giants, sons of Neptune, were so ugly with their single eye that they were cast by Cronos into the lower world. The chief among them was Polyphemus. They were afterwards released by Jupiter and in gratitude made him thunderbolts.

dahl'-ia (*dale*), a garden plant having large flowers, named after *Andrew Dahl*, a Swedish botanist of the eighteenth century.

dai'-sy, a common flower. The word comes from the Anglo-Saxon *daeges eage*, meaning day's eye: the daisy closes at night.

dam'-ask, a figured, woven stuff, originally silk, but now often of wool, linen or cotton. First made at Damascus, in Syria, whence it derived its name.

Dam'-o-cles (*-kles*). To be aware of the sword of Damocles is to perceive an impending danger in what at first sight was security and pleasure

Damocles was one of the flatterers of Dionysius of Sicily. Having admired the tyrant's wealth and pronounced him the happiest man on earth, he was invited by Dionysius to a sumptuous banquet. His pleasure was destroyed by perceiving a sword hanging over his head by a single horsehair.

dam'-son (*dam'-zon*), a small dark-bluish plum—from *damascene* or Damascus plum

dan-de-li'-on, a common wild plant with yellow flowers From the French *dent de lion*, lion's tooth. The leaves of the dandelion have a jagged, tooth-like edge.

A **Dan'iel** among men—is a man who is noted for his courage and wisdom. The Daniel of Biblical story was courageous in the face of opposition, and wise in counsel. (See the *History of Susanna* and *Bel and the Dragon* in the Apocrypha)

Da'vid and Jon'athan, said of two friends who are devoted to each other. The saying has originated in the Biblical account of the friendship of David and Jonathan (1 Sam xviii 1–4, xx 11–17)

dunce, one who learns slowly; an ignorant or stupid person From *Duns Scotus*, a Scots scholar who died in 1308 This word in its modern sense has exactly the reverse meaning of the original.

er'-mine (*-min*), a small fur-bearing animal; fur obtained from it, much used for the official robes of judges and peers Probably derived from the Latin *mus Armenius*, Armenian mouse, through French *hermine*, from Old High German, *harmo*, weasel.

Fa'-bi-an tactics, proceeding slowly and cautiously.

Fabius Maximus, who died in 203 B C, was a Roman leader who, by cautious delay and carefully avoiding a direct engagement, wore out the strength of Hannibal, whom he durst not meet in battle

fel'-low, a companion, one of a pair, as

> "This was my glove; here is the *fellow* of it."—SHAKESPEARE.

From the Icelandic *felagi*, akin to *felag*, companionship; literally a laying together of property.

flo'-ra, a collective name for all the *plant life* of a country or region

Flora was the goddess of flowers among the Romans. According to legend she married Zephyrus, the West Wind, and received from him the privilege of presiding over flowers, and of enjoying perpetual youth.

flor'-in, an English silver coin value 2s. It was originally a *Florentine* coin, i.e. belonging to Florence.

fret, to wear by rubbing, to vex, to irritate; to grieve over The word is derived from the Anglo-Saxon *fretan*, meaning to eat up or destroy

Gar-gan'-tu-an *appetite*, an appetite of gigantic proportions. Gargantua was the name of a giant invented by the famous French author Rabelais.

Glad'-stone bag, a light, wide-opening travelling bag. So named by the maker out of compliment to the famous statesman, W E. Gladstone, 1809-1898.

Go-li'-ath was an exceedingly strong man, whose story is related in the first Book of Samuel To be a "Goliath among men" is to surpass others by reason of great strength

good-bye, contraction of *God be with ye*; (*God be wi ye, God bw' ye, God bwye*).

gri-mal'-kin, an old cat, especially a female cat Probably from *gray malkin*.

Mrs. Grun'-dy is a general name for public fault-finders and busybodies. The term "Mrs Grundy" represents the opinion which one's friends and neighbours have about one's actions or words. "Mrs Grundy" was a person frequently referred to in Tom Morton's play *Speed the Plough*. "Mrs Grundy" has become proverbial for that section of society whose ideas of the proprieties are extremely narrow and conventional

guin'-ea (*gĭn'-ĭ*), an English gold coin now out of use. It was first made of gold brought from *Guinea*, in Africa, in the sixteenth century

Her-cu'-le-an (*-kū'-*), of, or like **Her'-cu-les** (*-kū-lēz*), the "strong man," or Samson of Greek story

Hercules was a celebrated hero who after death was ranked among the gods. He was possessed of immense strength, and achieved a number of difficult enterprises, which are generally called the twelve labours of Hercules.

hol'-i-day, formerly a *holy-day* or saint's day, a day on which no work was done.

hy'-dra-headed, having many heads (like the hydra), hence, difficult to root out; spreading.

Hydra was a celebrated monster with many heads, which, if cut off, were succeeded by others It was one of the labours of Hercules to destroy this monster, and he did so with the assistance of Iolas, who applied a burning iron to the wound as soon as a head was cut off

hy'-gi-ene (*-jĭ-ēn*), the science of healthy living.

Hygieia, the daughter of Aesculapius, was the goddess of health, both mental and physical, and was held in great veneration by the ancients

hy'-men, marriage **hy-men-e'-al,** pertaining to marriage

Hymen, the god of marriage, was pictured by the ancients as a handsome youth crowned with flowers, holding a torch in one hand, and in the other a yellow veil destined to cover his bride. Hymen was the son of Bacchus and Venus

Ish'-ma-el, an outcast, one who hates and is hated by the majority of people. Ishmael was the son of Hagar, and it was said of him, "His hand shall be against every man, and every man's hand against him." (See Genesis xvi 12)

ja-pan', a kind of very hard varnish. So called because it was originally made by the Japanese.

Job, the patriarch Job in the Bible is a type of patience under trying circumstances and conditions **Job's comforters** are those who, like Job's friends, while professing to comfort and console, only increase the distress.

jo'-vi-al, merry, gay, in good spirits. The planet Jupiter was thought to make those born under its influence joyful or jovial.

Jupiter (or Jove) was the most powerful of all the gods of the ancients, and his worship, under various names, was universal. When Jupiter became master of the world he divided it with his brothers He reserved the kingdom of heaven for himself, gave the empire of the sea to Neptune, and that of the underworld to Pluto.

Lady Day, the 25th March (quarter day), the day of the Annunciation of the Virgin Mary—"Our Lady."

lard'-er, the place where meat and other provisions are kept before being brought to table From the Old French *lardier*, a place to keep bacon in Lard was originally the fat from the pig

le'-thal, death-dealing, deadly; mortal

Lethe (*Lé-the*) was one of the rivers of hell, of whose waters the souls of the dead had to drink after they had been confined for a

certain time in Tartarus The water had the property of making them forget everything belonging to their former life. The word Lethe means the sleep of forgetfulness.

Lil-li-pu'-ti-an (*-lĭ-pū'-shĭ-ăn* or *-pū'-shŭn*) **proportions**—minute in size. Lilliput was the name given by Swift in *Gulliver's Travels* to the land of the pigmies.

mac-ad'-am, small broken stones compacted into a solid mass used for paving roads So called after the inventor, Mr. John L McAdam.

Mach-i-a-vel'-li-an (*măk-*) **strategy**—unscrupulous plans Machiavelli was an Italian statesman who wrote a book on statecraft in which, according to his enemies, unscrupulous tactics were justified.

mack'-in-tosh (*măk-*), a waterproof outer garment, the material from which mackintoshes are made. The cloth takes its name from the inventor, Charles Mackintosh, 1766-1843

mar'-tial (*-shal*), of war, warlike

Mars was the ancient Roman god of war. Though not invincible he was always accompanied by Victory, and is represented on ancient buildings with the uniform features of a strong man armed with a helmet, a pike, and a buckler

me-an'-der, a winding way or course (especially of a stream); a maze. From the Latin *Maeander*, originally a river in Phrygia proverbial for its windings

mer-cu'-ri-al, of, belonging to, or resembling the god Mercury; of a lively, active disposition, resembling quicksilver (the popular name for mercury, a silver-white liquid of a metallic nature)

Mercury was the messenger of the gods, and was also appointed god of eloquence, commerce, rain and wind; he was the special patron of travellers, shepherds, cheats and thieves. To make Mercury fleet of foot the gods gave him winged sandals, but as these did not seem sufficient they added the winged cap Mercury is sometimes spoken of as the "winged god" He also had a snake-encircled wand which possessed magic properties

"Foot-feather'd Mercury appear'd sublime
Beyond the tall tree tops, and in less time
Than shoots the slanted hail-storm, down he dropt
Towards the ground, but rested not, nor stopt
One moment from his home; only the sward
He with his wand light touch'd, and heavenward
Swifter than sight was gone" KEATS

mess'-mate, one who eats with others at the same table. The word comes from the Latin *missum*, past particle of *mittere*, to put or place (e.g. on the table), and *mate* which is related to *meat*

mi'-ser (*-zer*), a miserable person; a hoarder of money or other riches Derived from the Latin *miser*, wretched.

mob, a crowd of rough, disorderly people; vulgar persons Derived from the Latin *mobile vulgus* = the fickle crowd

mor'-phi-a (*-fĭ-ă*), a drug, obtained from opium, which causes sleep, and which deadens pain.

Morpheus was the son of sleep and the god of dreams The name signifies the fashioner or moulder, because he shaped or formed the dreams which appeared to the sleeper. He is usually pictured by artists as a sleeping child surrounded by poppies, his favourite flowers, because opium obtained from poppies induces dreams.

mus'-lin, a fine thin, cotton fabric, so-called from *Mosul*, a city of Asiatic Turkey, where it is said to have been first made

nav'-vy, a labourer employed in making canals, railways, etc. The word is an abbreviation of *navigator*, which originally meant a labourer employed on excavating canals for *navigation*

nec'-tar, in Greek and Roman mythology, the drink of the gods; a very delicious drink; the honey-juice of flowers, collected by bees. Through Latin from the Greek *nectar*, the drink of the gods.

nem'-e-sis, vengeance, punishment that follows wrong-doing. From the Greek, *nemo*, I distribute, deal out what is due

Nemesis, a daughter of Night, was a Greek goddess who measured out happiness and unhappiness to mortals. Had a man been happy hitherto, Nemesis sent him his share of trials to preserve the balance of good and evil, and vice versa.

nick'-name, a name added to or substituted for the proper name of a person, place, etc.; usually given in ridicule or contempt It comes from the Middle English, *an eke-name*, which has since been corrupted into a *nickname*.

O-lym'-pic, or **O-lym-pi-an,** of Olympus, a mountain in Greece

Olympus, in Greek mythology, was the residence of the gods, and the ancients supposed that the top of the mountain touched the heavens. The phrase " Olympian heights " in modern use means a position of eminence.

om'-ni-bus, a long, four-wheeled public vehicle. From the Latin *omnibus*, for all, dative plural of *omnis*, all

o-rac'-u-lar utterance, a seemingly wise, but often ambiguous, saying. The oracle was supposed by the Greeks to be the voice of a god speaking to men. The sayings of these oracles were commonly obscure and enigmatical.

pan'-ic, sudden fright, often without sufficient reason.

Pan was the god of shepherds and flocks. He was usually pictured as an exceedingly ugly satyr with the body of a goat, with horns, and with untidy hair and beard. He invented the syrinx or shepherd's flute As Pan usually had a terrifying effect on the inhabitants of the neighbouring country, that kind of fear which often seizes men, which is only imaginary, is termed *panic fear*.

pan'-try, a place where bread and provisions are kept From the Old French *paneterie*, and Latin *panis*, bread, food.

Peck'-snif-fi-an, hypocritical, falsely pretending to be very virtuous and benevolent, like Pecksniff, a character in Dickens's book *Martin Chuzzlewit*.

pen'-knife, a small pocketknife. It was originally a small knife used for making and mending quill pens—*pen* + *knife*.

Phar'-i-see (*făr'-ĭ-*), a member of an ancient Jewish sect, which held to the letter, rather than the spirit, of Mosaic law In modern use the word signifies a person who is more observant of the forms and ceremonies of religion than the practical application of it; a self-righteous person; a prig.

Phil-ip'-pic (*fĭl-*), an oration by **De-mos'-then-es** (*-ēz*), a famous Athenian orator, against the aggressions of *Philip*, King of Macedon, in modern use (when it is spelt with a small *p*), it is applied to a political speech or writing full of scathing denunciation.

Phil'-is-tine (*fĭl'-is-tīn*), a man with no interest in culture or the arts.

The Philistines, ancient inhabitants of Palestine, were looked upon as the greatest enemies of the Israelites, who regarded them as more or less barbarians.

port, a well-known dark red wine. Port is a corruption of *Oporto*, the name of the town in Portugal whence it was first shipped.

pu'-pil. The central spot of the eye is probably so named from the little images or reflections seen in it The word comes from the Latin *pupilla*, originally a diminutive of *pupa*, a girl

quick, alive, nimble, active; speedy. The Old-English word *quick* meant *alive*—hence the phrase, *the quick and the dead* means the *living* and the dead The *quick* of the finger nail is the part where the nail is living or growing, and is provided with nerves, so that if it is torn in that part it hurts. The word comes from the Anglo-Saxon *cwic*, meaning living, alive.

quix-ot'-ic (*kwiks-*), like Don Quixote (a famous eccentric hero of a Spanish romance by Cervantes), extravagant in speech or action; romantic; impossible.

Rey'-nard, a proper name, usually found in fables, for the fox It is of German origin, probably from *reginhart*, of which the literal meaning is strong in counsel.

roam'-er, a wanderer. The word originally meant one who made a pilgrimage to Rome The Old French word *romier* meant a pilgrim, in the first place a pilgrim going to Rome.

A Ro'-land for an Ol'-i-ver, an effective retort to a remark (tit for tat). Roland and Oliver, two heroes of French legend, on one occasion fought with each other, but neither was able to overcome the other.

Sam'-son, was the strong man of Israel, whose deeds are written in the Book of Judges, xiii -xvi When applied in modern use it means to be exceedingly strong

sand'-wich, two slices of bread (usually buttered) with meat, etc, placed between them Named after the 4th Earl of Sandwich, who frequently had his meals in this manner to save interrupting his game of cards.

sar-dine' (*dēn*), a small fish of the herring family, probably so-called from the island of *Sardinia*, off which it is caught in large numbers

saun'-ter-er, one who wanders about in an idle or leisurely manner. Probably from the Old French *il s'aventure*, he adventures (himself), through a shortened form *s'auntre.*

Scyl'-la to **Cha-ryb'-dis** (*sil-*, *ka-rib-*). A man is said to go from Scylla to Charybdis when he has fled from one danger only to encounter a fresh one

Charybdis was a daughter of Neptunus. She stole a part of the flock of Hercules, and in punishment was changed by Jupiter into a dangerous whirlpool in the Strait of Sicily.

Scylla, a beautiful nymph, had been changed into a monster by jealous Circe. She was so terrified by her own ugliness that she threw herself into the sea, and became a rough rock, which has since been called after her, between Italy and Sicily Scylla and Charybdis were objects of dread to the navigator, since, as they lay so close together, while striving to avoid one, it was almost impossible to escape falling a victim to the other.

sher'-ry, an amber-coloured wine, from *Xeres*, in Spain, where it is made

shire, a county; one of the divisions of Great Britain. In U.S A a division of a state. From the Anglo-Saxon *scir*, a division, province, county.

Sib'-yl (*-il*), a prophetess, fortune teller or an old hag The Sibyl was believed by the ancients to have the power of prophecy.

sil-hou-ette' (*-oo-et*), a profile portrait (with no other details) filled in with black. Named after Etienne de *Silhouette*, a French Minister of Finance, 1759

slave, one who is held in bondage, or under another's control, or mastered by some evil habit. The word comes through the French *esclave*, from German *sklave*, which originally meant a Slav prisoner of war.

smith, one who forges or beats into shape. From an Anglo-Saxon word akin to the Dutch word *smid.*

sol'-der, a metallic alloy which is melted on the joints of metals to fasten them together. From the Latin *solidare*, to fasten, to make solid.

Spar'-tan, relating to *Sparta* (ancient Greece), hardy; fearless; severe; rigorous, frugal. The people of Sparta were noted for the military organisation of their state, and the rigorous discipline and valour of their citizens. In modern use a "Spartan" is a person of great courage and fortitude.

Styg'-i-an (*stij'-*), relating to the Styx.

Styx was a river in hell across which the shades of the departed were ferried by Charon (*caré-on*) The phrase "Stygian gloom" therefore means a deep or profound gloom or darkness.

tan'-tal-ise (*-īz*), to tease, vex, or torment, by raising false hopes.

Tantalus, a son of Jupiter, was a king of Lydia. Because he had illtreated his subjects and insulted the immortal gods, he was doomed by them to be consumed with a raging thirst and an intolerable hunger. Although he had to stand in a stream of pure water he could never taste it, for as soon as he stooped the waters fled from his lips. Likewise, over his head hung a branch of luscious fruit, but when he tried to clutch

it the branch swung upwards out of his reach.

taw'-dry (*-dri*), vulgar and showy, cheap and worthless The word tawdry comes from *S. Audrey*, at whose fair, held near Ely, laces and gay toys of all kinds were sold.

tin'-sel, something sparkling or shining, showy but unsubstantial material; often made of polished metal for ornament or trimming. The word is derived from the old French *étincelle*, which once meant anything that sparkles or glistens, "cloth of tinsel" would have been cloth inwrought with silver and gold. In modern language "tinsel" means something tawdry or superficial

triv'-i-al, trifling, of little worth; commonplace From the Latin *trivialis*, meaning belonging to cross roads or streets: hence, that may be found everywhere; from *trivium*, a place where three roads meet, a cross-road; *tri-*, three, *via*, a way.

Tro'-jan, of Troy, an ancient city of N.W. Asia Minor: an inhabitant of Troy; a brave fellow; one who is possessed of the pluck, endurance, and determined energy attributed to the defenders of Troy.

Van'-dal, a person who wilfully, or through gross ignorance, destroys beautiful works of art. The Vandals were a race of Germanic origin who swept down on the Roman Empire and destroyed many books and works of art.

vol-ca'-no, a hill, or mountain, which sends out (from an opening, called its crater) smoke, ashes, lava, steam, etc. From the Latin *Vulcanus*, Vulcan, the god of fire.

vul'-can-ite, a hard kind of vulcanised india-rubber, ebonite. From the Latin *Vulcanus*—Vulcan.

Vulcan, the god of fire, a son of Jupiter and Juno, was ugly, misshapen, and lame, but was the most industrious of the gods. He made jewels for the goddesses, thunderbolts for Jove, and weapons for Achilles The volcanoes were his forges and workshops, for he was the god of iron, brass, gold and silver. In the statues of Vulcan he is represented holding a hammer in the right hand and pincers in the left.

Well'-ing-ton, a high boot for men coming up to the knee Named after Sir Arthur Wellesley, Duke of *Wellington*

worst'-ed (*woost-*), a woollen yarn used in knitting and in making cloth So named from Worstead, a village near Norwich, where it was first made. Worstead comes from *Worth*, an estate, and *stead*, a place

Xan'-thip-pe (*zan'-*), Socrates' wife, whose peevish scolding and quarrelsome temper have become proverbial.

ya-hoo', a coarse brutish person. Yahoo was the name given by Swift in *Gulliver's Travels* to a brute in human shape.

zeph-yr (*zef'-er*), the west wind, a soft gentle breeze.

Zephyrus was, in Greek myth, the gentle West or North-West Wind. The Greeks loved it because it brought freshness over their parched land Zephyrus was said to produce flowers and fruits by the sweetness of his breath.

Pairs of words frequently confused

1. **Affected :** made a display of, not natural (The proud man *affected* imperial sway)
   effected : brought to pass; accomplished. (They saw a solicitor and *effected* their purpose)
2. **affection :** love; kindly feeling
   affectation : an unnatural or assumed manner of acting or speaking (The child's *affectation* spoils his acting.)
3. **assent :** to agree to (The teacher gives his *assent* to a holiday)
   ascent : an upward slope.
4. **aesthetic :** that which is satisfying or agreeable, especially of the beautiful (The young man is engaged in *aesthetic* studies)
   ascetic : rigid in self-denial and devotion. (A hermit is an *ascetic*)
5. **altar :** a raised structure on which sacrifices are offered, or incense burned.

alter: to change; to make a thing different.

6. **bridle**: the head-gear for a horse.
bridal: belonging to a bride or a wedding

7. **council**: an assembly of persons called together for deliberation or advice. (The Town *Council* voted unanimously.)
counsel: interchange of opinions (All the chief priests and elders took *counsel* against Jesus, to put him to death)
counsel: to give advice to (Good sir, I do in friendship *counsel* you to leave this place.)

8. **canon**: a member of the governing body or chapter of a cathedral. (A law or rule, especially of the church)
cañon: a Spanish word meaning a deep, narrow mountain ravine worn by a water-course *The word is pronounced and sometimes written canyon.*

9. **cord**: a string, or line
chord: a combination of three or more musical notes which produce harmony.

10. **currant**: a small dried grape
current: a flowing or passing of water, electricity, etc

11. **cymbals**: brass dish-like instruments struck together in pairs.
symbols: emblems: tokens, characters, letters, signs, etc

12. **compliment**: an expression of confidence; civility, admiration; approbation, etc.
complement: that which fills up or completes. (The vessel's *complement* was one hundred and twenty.)

13. **dissent**: to differ in opinion from; a difference of opinion (Many people *dissent* from our personal views)
descent: act of descending, that which is descended, a change from higher to lower, a slope (There was a sudden *descent* in the temperature.)

14. **disease**: discomfort; trouble, disorder of the body, mind, state, etc (He suffers from an incurable *disease*)
decease: departure from this life; death. (The *deceased* was interred in the Abbey)

15. **eminent**: rising above others, high, prominent. (Gladstone was an *eminent* statesman.)
imminent: near at hand, threatening to occur immediately (Three times to-day you have defended me from *imminent* death)

16. **emigrant**: one who removes from one country to another
immigrant: one who comes to a country for the purpose of living there *Emigrant* marks the going out from a country, *immigrant* marks the entrance into it

17. **farther**: more remote, more distant than something else
further: to help forward, to assist. (*Farther* conveys the actual idea of *far*, *further* conveys the idea of something additional)

18. **legible**: that may be read (The clerk's writing was poor though *legible*.)
eligible: fit or worthy to be chosen (Three candidates were considered *eligible* for the post of captain)

19. **muscle**: fibrous tissue of animal bodies
mussel: a small bivalve shellfish

20. **marshal**: a military commander, a high official; to direct, to lead, etc
martial: suited for war, brave. (*Martial* music; *martial* step, *martial* bearing)

21. **palate**: the roof of the mouth touched by the food
palette: a small oval board on which an artist mixes his colours.

22. **popular**: pleasing to the people.
populous: abounding in people. (Belgium is a *populous* country)

23. **physic**: medicine.
physique: bodily structure and strength. (Athletes need a sound *physique*)

24. **practice**: to do, or perform often, customarily, or habitually (The youth is doing his music *practice*)

practise: to put into practice (The youth is about to *practise* on the piano)

25. **presence:** the state of being in a certain place; the opposite of *absence*. (The *presence* of the troops saved the city)
presents: gifts.

26. **respectfully:** in a courteous manner.
respectively: relating to each (Let each man *respectively* perform his duty)

27. **root:** the part of a plant under ground.
route: a course, a line of march or travel. (The *route* of the pioneers was rough and dangerous.)

28. **stationary:** remaining in the same place or condition (The mercury in the barometer was *stationary* during the hot weather)
stationery: writing materials (A book-seller often sells *stationery*)

29. **statue:** a carved image.
statute: a law enacted by parliament

30. **scull:** a short oar of a boat
skull: the bony framework of the brain

31. **vane:** a weathercock.
vein: a blood-vessel conveying the blood to the heart.
vain: having no real value; proud of petty things; conceited; showy

32. **vocation:** calling in life; profession (The hero's *vocation* was that of a lawyer.)
vacation: holiday time (The summer *vacation* lasted four weeks)

Words differently accented

33. **ab'sent:** to be away from; not existing
absent': to withdraw one's self to such a distance as to prevent intercourse; to depart from. (Jane is *ab'sent* from school, but must not *absent'* herself from the examination.)

34. **ac'cent:** a special stress of the voice to give prominence to one syllable of a word, a mark used to indicate the place of the stress to be given to a word
accent': to express the accent or stress, to mark emphatically. (In poetry you should lay a strong *ac'cent* on some words, but do not *accent'* too frequently.)

35. **att'ribute:** a quality belonging to a person or things. (But mercy is above this sceptred sway, It is an *att'ribute* to God himself.)
attrib'ute: to give, consider, or bestow something as due or appropriate to a person or thing. (We *attrib'ute* to the hero the quality of honour.)

36. **Au'gust:** the eighth month of the year
august': of a quality inspiring honour or reverence, sublime; majestic, etc. (So beautiful and so *august'* a spectacle is rarely seen.)

37. **com'pact:** an agreement between parties
compact': to join closely together; closely or firmly united (A *com'pact* was made with the firm to deliver the packages well wrapped and *compact'*.)

38. **con'cert:** agreement in design or plan, musical harmony; a musical entertainment
concert': to plan together, to settle or arrange by conference (We must *concert'* a plan for immediate action)

39. **con'duct:** manner of guiding oneself, personal behaviour
conduct': to lead, guide; direct

40. **con'summate:** to bring to completion, to raise to the highest degree. (The farmer's toil is *consummated* by a bountiful harvest)
consum'mate: of the highest quality (A man of perfect and *consum'mate* virtue.)

41. **con'test:** earnest struggle for superiority.
contest': to call to witness; to strive for. (Three candidates will *contest'* the election, and the *con'test* will be strenuous)

42. **con'tract:** an agreement or bargain between two or more persons; a

writing made by the parties arranging the agreement.

contract': to draw together or nearer; to make an agreement or bargain (It is illegal to break a *con'tract.* Heated metal *contracts'* on cooling.)

43. **con'trast**: unlikeness of associated things or qualities.

contrast': to put in *con'trast*, to set off one thing against another. (*Contrast'* your writing with that of another and you will probably see a notable *con'trast.*)

44. **con'verse**: that which is opposite in character to something else, free interchange of thoughts or views.

converse': to hold intercourse, to talk with or about. (A rainy day is the *con'verse* of a fine day To *converse'* well is a useful gift)

45. **con'vert**: a person won over from one opinion to another; one who turns from the controlling power of sin to that of holiness.

convert': to cause to turn; to turn back, to change from one state to another (The shipwrecked mariners tried to *convert'* their clothes into sails)

46. **con'vict**: a person proved guilty of a criminal offence.

convict': to prove or find guilty of an offence. (The culprit was *convict'ed* by his own conscience.)

47. **des'ert**: a barren tract; a wilderness; a solitary place

desert': worthiness of reward or punishment; to leave in the lurch; to abandon. (According to their *deserts'* will they be judged. A noble fellow will never *desert'* a friend)

48. **de'tail**: a small part of a whole. (The traveller related many horrifying *de'tails.*)

detail': to relate the particulars, to enumerate (The student began to *detail'* the whole facts of the case.)

49. **ex'tract**: a selection from a writing or speech; something prepared from another substance. (Bovril is an *ex'tract* of beef)

extract': to draw out, to choose. (A dentist *extracts'* teeth.)

50. **fre'quent**: often to be met with; happening at short intervals.

frequent': to visit often; to resort to habitually. (*Fre'quent* visits to the Cinema are tiring It is a mistake to *frequent'* the Cinema too often)

51. **in'cense**: material used to produce a perfume when burned; the perfume or smoke exhaled from burning of spices and gums.

incense': to excite a passion. (The pagans were *incensed'* when the Christians refused to burn *in'cense* to their gods)

52. **in'sult**: gross indignity offered to another.

insult': to treat another with insolence.

53. **in'valid**: a person weak or infirm

inval'id: of no worth. (The will of the deceased was considered *inval'id*)

54. **min'ute**: the sixtieth part of an hour, or degree, a memorandum or draft, especially of committee meetings.

minute': very small; trifling. (A stenographer takes the *min'utes* of the Company's meetings. The *min'ute* hands of watches are often *minute'*.)

55. **pres'ent**: being within view, in reach, or at hand, begun but not ended; a gift.

present': to bring or introduce into the presence of someone, to offer to view; to make a present. (At the *pres'ent* time it is unwise to *present'* the invalid with *pres'ents*)

56. **prod'uce**: that which is brought forth, or yielded.

produce': to lead forth; to bring forth; to yield. (Well cultivated fields *produce'* good crops; the *prod'uce* from badly cultivated fields is often scanty)

57. **pro'test**: a solemn declaration of opinion, especially used of an objection

protest': to make a solemn declaration, to object, to vow (The prisoner's *pro'test* of innocence was of no avail, he was led to the cells *protest'ing* loudly.)

WORDS FREQUENTLY MISPRONOUNCED

TABLE OF SOUNDS

A. mäte, mat, făt, fâr, *a*ll
E. s*ee*m, mē, met, bĕd, h*er*.
I pīne, pin, nĭp
O nōte, o as *ough*, in th*ough*t, not, plŏt. m*oo*n, bŏŏk
U. pūre, nut, bŭd

Ab-do'-men (*-dō'-*)
ac-col-ade' (*ak-kol-ād'*)
a-cu'-men
ad-ver'-tise-ment (*-tĭz-*)
a'-er-ate.
a-e'-ri-al
aes-thet'-ic (*ēs-*)
ag'-ile (*ăj'-il*).
al-bi'-no (*-bē'-*)
a'-li-as.
al'-i-bi (*-ĭ-bī*)
al'-le-go-ry.
a-man-u-en'-sis.
an-ach'-ro-nism (*-ak'-*)
an-tip'-o-des (*-o-dēz*)
ap-pa'-rent (or *-âr-*).
ap'-pli-ca-ble (not *ă-plik'-*).
a'-phis (*ā'-fis*)
a'-pi-a-ry (*-pĭ-*)
a-pos'-tro-phe (*-fe*)
ap-ro-pos' (*ăp-rō-pō'*)
ar'-chives (*-kīvz*).
arc'-tic
ar'-id (*ăr'-*, not *ā-rid*)
ar-te'-si-an (*-zhn*).
as-cet'-ic (*-sĕt'-*).
at-tor'-ney (*-tur'-nĭ*).
a'-vi-a-ry (*-vĭ-ă-rĭ*).
ba-cil'-li (*-sĭl'-lī*)
bad'-i-nage (*bad'-ĭ-nâzh*).
ban'-al (*ban'-*, or *bā'-nal*)
bar'-rage (*-rej*)
bi-cen'-te-na-ry (also *bi-cen-tē'-*)
bi-zarre' (*bĭ-zâr'*)
bou'-doir (*boo'-dwar*)
brough'-am (*broo'-am*, or *broom*)
brusque (*ŏŏsk*, *-ŭsk*)
bu-reau'-cra-cy (*-sĭ*)
ca-bal' (*kă-bal'*)
caf'-é (*kăf'-ā*).
cam-a-rad'-e-rie (*-răd'-ĕ-rē*).
ca-mel'-o-pard
caout'-chouc (*koo'-chook*)
ca'-ri-es (*-rĭ-ēz*)
ca'-se-in, or -ine
cascar'-a
cel'-lo (*chel'-lō*)
cen'-ten-ar-y (also *cen-tē'*)
cen-trif'-u-gal
ceorl (*kurl*, or *churl*)
cha-grin' (*sha-green'*)
chal-ced'-o-ny (*kal-sed'-ō-nĭ*, or *kal'-sĭ-dō-nĭ*)
chalet (*shă'-lā*).
cha-lyb'-e-ate (*ka-lib'-ĭ-āt*)
cha-me'-le-on (*ka-*).
chap'-er-on (*shap'-er-ōn*)
*char'-a-banc (*shar'-a-ban*)
char'-la-tan (*shar'-*).
chasm (*kazm*)
chev-a-lier' (*shev-a-lēr'*)
chi-me'-ra (*kĭ-mē'-ră*)
chor'-al.
cin-cho'-na (*sin-kŏ'-*)
clan-des'-tine (*-tin*)
clem'-a-tis
clere'-story (*kleer'-*, not *klĕres'-*)
co'-bra (not *kŏb'-*)
cog'ni-zant (also *kon'-i-zant*)
col'-lo-quy (*-kwĭ*).
con'-duit (*-dĭt*)
com'-pro-mise (*-mīz*)
*con-tre-temps' (*kon-tr-ton'*)
corps (*kōr*)
coup (*koo*).
cre-scen'-do (*-shen'-*)
da-coit' (or *da-koit'*)
de'-bris (*dā'-brē*).
de-but' (*da-bü'*)
de-mesne' (*-mēn'*)
de'pot (*de'po* also *dep'-ō*)

* *n*—French nasal, almost like *ng* in *ing*

des'-ue-tude (*-we-*)
des'-ul-to-ry
det'-o-nate
dil'-a-to-ry.
diph-the'-ri-a (*dif-*, not *dip-*).
duc'-at (*dŭk'-*).
ed'-i-ble (*-ĭ-bl*)
e'-lon-gate (*-long-gate*).
*en-core' (*an-kŏr'*).
e-nig'-ma
e-pit'-o-me.
er-ra'-tum (*-rā'-*, not *râ-*).
ex-tem'-po-re (*-pŏ-re*, not *-por*)
fa'-cet (*-set*).
fac'-ile (*fas'-ĭl*)
fac-sim'-i-le (*fak-sim'-ĭ-lē*)
fa-kir' (*-keer'*).
fa-tigue' (*-tēg'*)
fe'-tish (or -tich) (*fē'-*, or *fĕt'-*).
fi'-nis (*fi'-*).
fjeld (*fyeld*)
fjord (*fyord*).
flor'-a.
flor'-al.
for'-mid-a-ble (not *for-mid'-*).
foy-er' (*fwa-yā'*).
fra'-cas (*fră'-kă*).
frag'-ile (*fraj'-īl*, not *frā-jīl*).
gau'-cho (*gau'-chō*)
ge'-nie (*jē'-nē*).
ger-mane'.
gey'-ser (*gī'-zėr*).
gnome (*nōm*)
gra'-tis (not *grăt'-is*)
gua'-no (*gwâ'-nō*).
gy'-ro-scope (*jī'-*).
gyves (*jīvz*).
hal'-cy-on (*-sĭ-*).
ha'-rem (*hā'-*)
haulm (*hōm*).
heif'-er (*hef'-er*).
hei'-nous (*hā'-nŭs*)
he'-li-o-graph (*-graf*)
hom-œ-op'-a-thy (*hŏm-ĭ-ŏp'-ă-thĭ*).
hy-per'-bo-le
im'-be-cile (*-sil*, or *-seel*).
im'-mi-nent
im-mo'-bile (*-bĭl*, not *-bīl*)

im'-pi-ous (*-pĭ-us*)
in-cog'-ni-to (*-kog'-nĭ-*).
in-dict' (*-dīt'*, not *-dikt*).
in-ex'-o-ra-ble (*-ră-bl*)
in-ex'-pli-ca-ble (*-kă-bl*)
in'-fa-mous (*-fă-mus*)
in-gra'-ti-ate (*-shĭ-*).
in-im'-i-cal (*-ĭ-*).
in'-te-ger (*-jer*).
in'-ter-est-ing.
in-ter'-stice (*-stĭs*)
in-trigue' (*-trēg'*)
in-vi'-o-la-ble (*-lă-bl*)
i-ras'-ci-ble (*ī-ras'-sĭ-bl*)
ir-re-fu'-ta-ble (or *ir-ref'-*)
ir-rep'-ar-a-ble.
ir-rev'-o-ca-ble (*-kă-*)
i-sos'-ce-les (*-se-lēz*)
i-tin'-er-ant (*ī-*)
ju'-jit-su (*joo'-jit-soo*)
ka'-o-lin
Kha-li'-fa (*kă-lē'-*)
ki'-wi (*kē-wĭ*).
kraal (*krâl*)
lar'-ynx (*-inghs*).
lib'-er-tine (*-tĭn*).
lon-gev'-i-ty (*-jev'-ĭ-tĭ*)
†lough (*loCH*, not *luf*).
ma-lign' (*līn*)
mar'-ga-rine (*-gă-rēn*)
mar-quee' (*-kē*).
mas'-sage (*-sâzh*)
med-i-æ'-val (*mĕd-ĭ-ē'-*)
mel-lif'-er-ous (*-us*)
me-men'-to
mem'-o-ra-ble (*-ră-bl*)
mer'-ce-na-ry (*-sĕ-na-rĭ*).
met'-a-phor (*-fŏr*)
mien (*mēn*).
min'-i-a-ture (*-ĭ-ă-tūr*).
mi-rage' (*-râzh'*)
mo'-bile (*-bĭl*, not *-bīl*)
mon'-grel (*mung'-*).
mon'-o-logue (*-log*).
mon-op'-o-ly (*-lĭ*)
mort'-gage (*mor'-*).
na-ive' (*nâ-ēv'*)
non'-chal-ance (*-shal-ans*)

* *n*—French nasal, almost like *ng* in *ing*

†—Guttural CH as in Scottish *loch*

nou'-gat (*noo'-gâ*).
nox'-ious (*nok'-shus*)
nu'-ga-to-ry (*nū'-gă-tŏ-rĭ*).
o-a'-sis, or o'-a-sis
ob-se'-qui-ous (*-kwĭ-us*).
oc-cult'
o'-di-ous (*-dĭ-us*).
om-nis'-cient (*-nish'-ent*).
o-paque' (*-pāk'*).
open Sesame (*ses'ă-mē*)
or'-al
o'-ri-ent (*-rĭ*).
os'-cil-late (*-sil-*).
o-ver-whelm' (*-hwelm'*).
pæ'-an (*pē'-*).
pal-an-quin' (*-kēn'*).
pa-la'-ver (*-lâ'-*)
pan-a-ce'-a (*-sē'-*).
pan-o-ra'-ma (*-râ'-*).
pan'-to-mime (not *mine*)
pa-py'-rus (*-pī'-*).
par-ab'-o-la.
pa'-ri-ah (*pā'*, or *pâ'-rĭ*).
pec'-ca-ry (*pĕk'-kă-rĭ*)
pe-cu'-ni-a-ry (*-nĭ-a-rĭ*).
ped'-ant.
per'-emp-to-ry (*-rĭ*).
per'-go-la.
per-im'-e-ter.
pes'-tle (*pes'-l*).
pe-tard'.
*pi'-broch (*pē'-broCH*)
pique (*pēk*).
ple-be'-ian (*plē-bē'-yăn*)
pleth'-o-ra (*-ōr-ă*, or *plĕ-thŏ'-ră*)
plov'-er (*plŭv'-er*)
pneu-mo'-ni-a (*nū-mō'-nĭ-ă*)
pome'-gran-ate (*pŏm'-gran-āt*).
pon'-iard (*-yard*).
pres-tige' (*-tēzh*).
pro'-te-in (*-tē-ĭn*).
pseu'-do-nym (*sū'-dŏ-nim*).
quag'-ga (*kwăg'-*).
quas'-si-a (*kwash'-ĭ-ă*).
quer'-u-lous (*-lus*).
queue (*kū*).
qui-es'-cent (*kwī-es'-ent*)
quix-ot'-ic (*kwiks-*).

* Guttural CH as in Scottish *loch*.

quoit (*koit*).
rab'-bi (*-bī*)
rab'-id.
ra'-jah (*râ'-*)
rasp'-ber-ry (*raz'-*).
re-cal'-ci-trant (*-kăl'-sĭ-*)
rec-i-proc'-i-ty (*res-ĭ-pros'-ĭ-tĭ*)
re-con'-nai-sance (*re-kon'-nā-săns*)
rec-on-noi'-tre (*-noy'-ter*).
rec'-re-ant (*rĕk'-*).
re-dis-trib'-ute.
red'-o-lent
reg'-icide (*rej'-ĭ-sīd*).
rem-i-nis'-cence (*-sens*).
re-nais'-sance (*rĭ-nā'-săns*)
rep'-li-ca (*-lĭ-kă*).
re'-qui-em (*rē-kwĭ*, or *rĕk-wĭ*)
res'-pite (*-pĭt*, not *-pīt*)
res'-tau-rant (*-to-rân*, or *-rant*)
re-veil'-le (*ri-val-y*)
ric'-o-chet (*rĭk-ŏ-shā*).
ris'-sole (*ris'-sol*)
route (*root*).
sa-ga (*sâ'-gă*)
sah'-ib (*sâ'-*, or *sā'-*).
sal'-u-ta-ry (*-tă-rĭ*).
sa-ti'-e-ty (*să-tī'-ĭ-tĭ*).
sed'-en-ta-ry.
ser'-ra-ted.
si'-ne-cure (*sī-nĭ-kūr*).
so'-journ (*sŏ'-jern'*, or *sŏj-ern*)
sub-pœ'-na (*pē'-nă*).
su-per'-flu-ous (*-ŭs*).
tab'-ard.
tac'-i-turn (*tas'-ĭ-*)
tar'-pau-lin.
tau-tol'-o-gy (*-jĭ*)
te-lep'-a-thy.
tel'-e-pho-ny (or *tel-ef'-ō-*).
ter'-ma-gant (*-mă-gănt*).
the'-a-tre (*thē'-ă-tr*).
ti-a'-ra (*tĭ-ā'-ră* or *tiar'a*)
ti-rade' (*tĭ-rād'*).
tor-na'-do (*-nā'-*, not *nâ'-*).
trans-mi'-gra-to-ry (*-mī'-gră-tō-rĭ*)
tri-cen'-ten-a-ry (*-sen'-ten-ă-rĭ* or *-sen-ten'-*).
tur'-gid (*-jĭd*).
uh'-lan (*oo'-*, or *ū'-*).
Uit'-land-er (*oyt'-*, or *wēt'-land-er*)

um-brel'-la (*-lă*).
u-na-nim'-i-ty (*-ĭ-tĭ*)
un-con'-scion-a-ble (*-shun-ă-bl*)
un-prec'-e-dent-ed (*-pres'-*).
un-sta'-ble.
vac'-il-late (*văs'-*).
va-ga'-ry (*vă-gā'-*).
val'-et (*văl'-ĕt*, or *văl'-ā*).
val-ise' (*-ēs'*, not *văl'-ĭs*)
vap'-id.
ve'-he-ment (*vē'-he*)
ver-mi-cel'-li (*-chel'-lĭ*)
vet'-er-in-ar-y (*-ĭ*)
vict'-ual (*vĭt-l*).
Vik'-ing.
vi-ra'-go (*vĭ-rā'-*)
vir'-ile (*vĭr'-ĭl*).
vis'-count (*vī'-*).
viz'-i-er (*vĭz'-ĭ-ėr*).
Wednesday (*wenz'-dā*)
worst'-ed (*wōōst-*).
ze'-bra (*zē'-bră*)
ze-na'-na (*-nâ'-*)
ze'-nith (*zē-nith*, or *zĕn'-*).
zo-o-log'-i-cal (*-lŏj'-*).
zo-ol'-o-gist (*-jĭst*)

Abbreviations and words used in Correspondence.

a/c. Account.
ad. or **advt.** Advertisement.
ad va-lo'-rem. According to the value
a-gen'-da. List of things to be discussed.
a-man-u-en'-sis. A person who writes what another dictates.
an-on'-y-mous, or **anon.** Nameless.
cf. (*confer*), compare.
Co. Company.
C.O.D. Cash on delivery.
cr. Credit or creditor.
C.W.O. Cash with order.
cwt. Hundred-weight (*c.* for *centum*—hundred)
do. Ditto, the same thing as before.
dr. Debtor.
Dr. Doctor.
Ed. Editor.
encl. Enclosure
fcp. Foolscap (paper).
fo. Folio.
f.o.b. Free on board.
f.o.r. Free on rail
frs. Francs (French coins)
Hon. Sec. Honorary Secretary (unpaid)
ib. The same.
id. The same
inst. Instant, the present month.
Int. Interest.
I.O.U. I owe you; a form acknowledging a debt.
jun., jnr., jr. Junior.
Ltd. Limited.
M. *Monsieur.*
Mlle. *Mademoiselle*, Miss
Mme. *Madame*, Madam or Mrs.
M.O. Money Order
Monsieur. (*mus-yar'*), Sir
Mes-sieurs. (*mā-syur'*), plural of *Monsieur*, Gentlemen.
MS., plural **MSS.** Manuscript.
No. Number
p.c. Post-card
pd. Paid.
per pro. or **p p.** Contraction of *per pro-cu-ra-ti-o'-nem*, by the authority of, and on behalf of (used in signatures by an employee for his employer).
P.O. Post Office; postal order; petty officer.
P.O.O. Post Office Order
prox'-i-mo. In the next month; generally abbreviated to **prox.**
P.S. (*post scrip'-tum*), postscript
P.T.O. Please turn over.
re. In the matter of; concerning.
R.S.V.P. Abbreviation of **répondez s'il vous plaît** (*rā-pon-dā' sēl voo plā*), please reply.
Rt. Right.
Rt. Hon. Right Honourable.
Rt. Rev. Right Reverend.
R.W. Right Worshipful
sc. (*scī'-lĭ-cet*). Namely
seq. (*se-quen'-tes*). The following
sic. So; thus
sig'-nor. (*sēn'-yor*). Mr ; sir.
sig-nó-ra. Mrs , madam

sub ro'-sa. Privately; secretly.
ult. or **ul'-ti-mo.** In the last month.
vid. or **vi'-de.** See.
ver-ba'-tim. (-*bā*-). Word for word
ver'-sus or **v.** Against
vi'-a. (*vī*-) By way of.
viz. Abbreviation of **videl'icet.** Namely, that is.
visé. (*vē'-zā*). Signature on a passport

A Treasury of Words: Nouns.

1. Activity: briskness; quickness; promptitude; alertness; agility; vivacity; zeal, alacrity; energy, vigour; industry; assiduity; diligence, perseverance, patience, persistence.

Inactivity: idleness; sloth; laziness; indolence; supineness, languor, torpor; dilatoriness; somnolence, lethargy, trance; hibernation; dream.

2. Agent: performer; operator; hand; executor; maker, consignee; artist; workman; artisan; artificer; architect; mechanic; machinist; engineer; manufacturer, practitioner; operative, journeyman; labourer, smith; co-worker.

3. Agriculture: cultivation; husbandry; farming; tillage; gardening, horticulture; floriculture; vineyard; vinery; garden; nursery; hothouse; orchard, conservatory, greenhouse; winter garden; pinery; fernery; husbandman; horticulturist, gardener; florist; agriculturist, farmer.

4. Amusement: diversion; entertainment, sport; recreation; relaxation, treat; pastime; holiday; frolic; game; prank, dance; festival; revelry; feast, banquet.

5. Appearance: phenomenon; sight; spectacle; show; scene; view, prospect, vista; landscape; display; pageant; panorama; phantom; apparition; spectre; aspect; look; complexion; shape; mien; air; cast; carriage, demeanour; expression; presence; feature; countenance; visage; profile

6. Arrival: home, return, goal; destination; harbour, haven; port; landing-place, terminus.

Departure: removal; exit; exodus; embarkation; flight; adieu; farewell.

7. Assemblage: collection, gathering; muster, association; concourse; assembly; congregation, congress; convocation, synod; museum; menagerie; multitude, crowd, throng, rabble; mob, press, crush; horde, posse, body; tribe; crew; gang, knot; band; party; swarm, shoal; bevy; galaxy; covey; flock; herd; drove, corps; troop; squad; squadron; phalanx; platoon; company, regiment; battalion, legion; host; army; clan; brotherhood, sisterhood; fraternity; party; volley, shower; storm; group, cluster; parcel, bundle, faggot, truss; shock, rock; stack, sheaf, accumulation; congeries; heap; lump, pyramid; pile, cumulation, conglomeration.

8. Attack: offence; assault; charge; onset; onslaught; brunt; sally, invasion; irruption; foray; raid; devastation; siege; investment, fire; volley; cannonade; broadside, bombardment, fusillade

Defence: self-defence, self-preservation, protection; guard; guardianship; ward; security, impregnability; fortification, stronghold; fortress; citadel; asylum; defender; protector; guardian; champion, knight-errant.

9. Authority: influence, patronage; power; control; despotism; command; empire; rule; dominion; sovereignty; supremacy; lordship; mastery; government; presidency; monarchy.

Laxity: laxness; licence; relaxation, slackness; toleration, anarchy; misrule, interregnum.

10. Business: affair; concern, task, work, job; errand; commission; office; charge; care, duty; province; department; function; mission; vocation, calling; profession; trade; faculty; craft; career; line; place, post; sphere; capacity; employment; engagement; exercise; occupation; situation.

11. Carrier: porter; coolie; conductor; locomotive; horse; steed; charger; pack-horse; donkey; mule; camel; dromedary; llama, elephant; carrier-pigeon.

Carriage: caravan; wagon; stage-coach; sledge; wheelbarrow, coach; chariot; omnibus, sedan chair; palanquin, litter; stretcher; motor car, ship, vessel; craft, squadron, dreadnought, schooner; barge; smack; yacht, whaler; collier; submarine; boat, dinghy; balloon; aeroplane; airship; aerobus.

Velocity: speed, celerity; rapidity, expedition, agility; promptness; promptitude, dispatch; haste; precipitation.

12. Compact: contract, agreement, bargain; pact; stipulation; covenant; settlement; convention, charter, treaty, indenture, negotiation; transaction; ratification; settlement, bond.

13. Contention: strife; contest, struggle; debate; competition, rivalry; race; heat; steeplechase, wrestling, conflict; skirmish; encounter, fight, battle, combat; action; engagement, joust; tournament; duel, war; hostilities

Peace: amity; truce, harmony, concord; agreement; unanimity; reconciliation; armistice; suspension of hostilities.

14. Courage: bravery, valour; boldness; spirit; daring; gallantry; intrepidity; confidence; audacity; nerve; pluck, fortitude, firmness; resolution; heroism, chivalry.

Cowardice: timidity, faint-heartedness; baseness

15. Courtesy: good manners; politeness, polish, civility; good temper; complacency; graciousness; affability; amiability; compliment; obeisance; reverence, courtesy; salaam, embrace, obsequiousness

Discourtesy: rudeness; incivility, misbehaviour, ill-temper; churlishness; moroseness; austerity, irascibility.

16. Director: manager; master; head, minister; premier; governor; rector, comptroller; superintendent; supervisor, president; superior; inspector; visitor; monitor, overseer; taskmaster; official; officer; conductor, steersman; pilot, guide, guard, driver; postilion; chauffeur; steward; bailiff; foreman.

17. Food: nourishment, provender, nutriment; provisions, ration, prey; forage, pasturage; fare; diet; regimen; victuals; refreshment, entertainment, banquet.

18. Gift: donation; present; boon; favour; grant; offering; bribe; charity; alms; bounty, gratuity, allowance; contribution; subscription; tribute; bequest; legacy.

19. Gust: blast, breeze; squall; gale, storm; tempest; hurricane; whirlwind; tornado, simoom; monsoon, trade wind; sirocco

20. Information: communication, intimation; notice; notification, announcement; statement, representation, specification, report; advice, hint; suggestion, insinuation; glance; gesture; whisper, implication.

Concealment: secrecy; stealth, hiding; disguise; slyness, mystery; mystification; reservation, puzzle, enigma; riddle.

21. Inhabitant: resident; dweller; occupier; occupant; householder; lodger, inmate; tenant, sojourner; settler; squatter; backwoodsman; colonist; denizen; citizen, townsman; villager; cotter; native; aborigines; garrison; crew; population, colony; settlement, household

Abode: dwelling, lodging; residence; address; habitation; berth; seat; quarters, home, fatherland; country, homestead; fireside; hearth; roof

22. Junction: union, connection; conjunction; annexation; attachment, matrimony; confluence, communication, joint, juncture, hinge; reunion.

Separation: disunion; isolation, parting; division; fracture; dislocation, severance; section; cleavage; breach, divorce.

23. Journey: excursion; expedition; circuit; pilgrimage, promenade, emigration, procession, cavalcade, caravan, navigation, voyage; cruise; sail, flight

24. List: catalogue; inventory; schedule; register; record; account; syllabus; roll, tally; file; panel; calendar; index; table, book; ledger, synopsis; contents, invoice; bill of lading; bill of fare, prospectus, programme; menu.

25. Love: fondness, liking, inclination, regard, partiality, admiration, affection,

sympathy, tenderness; attachment; enthusiasm; rapture; infatuation

Hate: hatred, disfavour; estrangement; odium, umbrage, grudge; malice; disgust, repugnance; aversion; antipathy, dislike.

26. Party: partnership, fraternity, company; society, firm; house; body; corporation, guild, fellowship; brotherhood, sisterhood, communion, clan; club; gang, faction; cabal, league; alliance; coalition; confederacy, federation; side, band, staff; crew; set; posse, phalanx

27. Plan: scheme; devise; imagine, design; frame, contrive; forecast; project; plot, invent; prepare; hatch.

28. Pleasure: gratification, enjoyment, relish, zest; satisfaction, content; comfort; joy; gladness, delight; happiness; felicity; bliss; ecstasy.

Pain: suffering; displeasure, dissatisfaction, discontent; discomfort; uneasiness; disquiet; weariness, care, anxiety; vexation, trouble; solicitude, grief, sorrow, affliction, unhappiness, misery; wretchedness; anguish, martyrdom.

29. Repute: distinction; note, reputation; notoriety; celebrity; fame, popularity; renown, immortality; glory, honour; credit; regard, respect; dignity; grandeur, splendour, majesty, rank; precedence; eminence, chief, leader.

Disrepute: discredit; degradation, confusion; dishonour, shame, disgrace; odium; ignominy, infamy, reproach; imputation

30. Scholar: professor, graduate; doctor, gownsman, philosopher; clerk, linguist, pedant, pedagogue, bookworm; bluestocking.

31. Sound: noise; strain; voice, cry, shout, scream; groan; din; clangour, uproar; peal, echo, chorus, knock; report; explosion; discharge, crash, ring, jingle; chime; grating, creak.

Silence: stillness; quiet; peace; calm; hush, whisper, murmur

Animal sounds: cry, roar, bellow, bark; yelp; howl, bay; yap, growl; grunt, snort, neigh, bray, croak, snarl, mew, purr, bleat, low; caw; coo, cackle; gobble, quack, squeak, chuckle, cluck; clack; chirp, chirrup; crow, twitter; drone.

32. Store: stock, fund, supply, reserve, budget, quiver, mine; quarry; fountain, collection; accumulation, heap, hoard, magazine; rick; bank, treasury, reservoir; repository; repertory, depository, museum; conservatory, menagerie; receptacle, warehouse; granary, armoury; arsenal, coffer.

33. Traveller: voyager, itinerant, passenger, tourist; vagrant; pilgrim, pedestrian; emigrant, fugitive; horseman; equestrian, cavalier; postilion, mariner; navigator, sailor, marine; aeronaut

Verbs.

34. To amuse: divert; interest, entertain; rejoice, cheer, recreate; enliven; solace, play, sport, disport; revel, frolic; caper.

35. To approve: esteem, appreciate, value, admire, commend; recommend; praise, laud, compliment, cheer, eulogize, extol, glorify; magnify, bless.

To disapprove: criticise, disparage, depreciate; defame; revile, blame, censure, stigmatise, reprehend, admonish; remonstrate; reprove, lecture; reprimand, reproach; chide, scold, abuse, ostracise.

36. To assemble: collect; muster; meet, unite, cluster; flock, herd, crowd; throng; associate, congregate, resort; convoke, accumulate

To disperse: scatter, sow; disseminate, diffuse, shed, spread, dispense, distribute; dispel, strew, sprinkle, retail, intersperse.

37. To be attentive: attend, advert to, mind, observe, look at, see, view; remark, heed, notice; apply the mind, look after; examine, glance at, scrutinise; review; contemplate

To be inattentive: overlook, disregard; pass over, gloss over; divert the attention, distract, disconcert, confuse; perplex, bewilder.

38. To describe: speak of; state; set forth; sketch; delineate; represent; portray, depict; relate, recite; recount; sum up; run over; recapitulate, narrate; rehearse, report.

39. To direct: manage; govern, guide; conduct; administer, regulate; steer, pilot; preside; superintend, supervise; control.

40. To enter: intrude; break in; invade; flow into; insinuate itself; penetrate; insert; drive in; wedge in; introduce; import, smuggle.

To eject: emit, expel; reject; discharge; give out, cast out; clear out; clean out, drive out; root out; pour out; evacuate; disgorge; empty; banish; exile; deport; turn adrift

41. To expand: enlarge; extend; grow; increase; swell; gather; dilate, stretch; spread; bud; shoot; sprout; germinate, open; expand, distend, develop; amplify; magnify; inflate.

To diminish: lessen; decrease; dwindle, shrink; contract; collapse; wither; decay; waste; wane, ebb

42. To hinder: impede; prevent; retard, slacken, obviate; avert; ward off; incommode; obstruct; stay; stop; bar; lock; restrain; check; discourage; discountenance, thwart, interrupt; intercept, frustrate; defeat; interpose; interfere; encumber.

To aid: assist; help; succour; support, promote, further, sustain; uphold; advance, furnish; reinforce, nourish; favour; encourage; patronise; serve; oblige; accommodate, attend; wait on; entertain, expedite; quicken; hasten.

43. To improve: mend, advance, progress; amend, rally; recover; ameliorate; cultivate, repair; correct, rectify; reform; redress, purify; refine, relieve, refresh; restore; renew; palliate, mitigate.

To deteriorate: wane, ebb, degenerate, decline, sink; lapse, recede; decay, perish; die; injure, impair; mar; vitiate, debase; spoil; corrupt; tarnish, corrode; undermine, disorganise, lay waste, ruin

44. To increase: augment; enlarge; amplify; extend; dilate; swell; expand, grow; stretch; rise; advance; spread; raise; heighten; strengthen; exalt; magnify; exaggerate.

To decrease: diminish; lessen, dwindle; shrink; contract; shrivel; waste; wear, wane; ebb; decline; reduce; curtail, abate; extenuate; weaken

45. To induce: move; lead; draw; bring; influence; bias; procure; incline, dispose; prompt; whisper; recommend, encourage, invite; solicit; entreat; plead; exhort; attract; tantalise; entice; lure, decoy, conciliate; coax, cajole; inveigle, persuade; bribe

46. To inquire: seek; search; reconnoitre; explore, look for, sound; rummage; ransack; pry; pursue, hunt, track, trail; trace; investigate; to follow up, institute; conduct; prosecute an inquiry; overhaul, examine; study, consider; fathom; discuss; agitate; probe; scrutinise; analyse; dissect; sift; interrogate; catechise, cross-examine.

To answer: respond; reply; retort; rejoin; acknowledge, explain; solve, resolve; expound; decipher; interpret, unravel; discover.

47. To liberate: free; emancipate; release; loose; relax; unfetter; disengage; discharge; dismiss; deliver, extricate; clear, acquit, redeem, ransom.

To restrain: constrain; restrict; curb, debar; fetter; bridle; muzzle; confine; impound; imprison; incarcerate; immure.

48. To please: gratify; satisfy, indulge; humour, regale; refresh, charm; rejoice; cheer; delight; enliven; transport; bless; captivate; fascinate; enrapture.

To displease: annoy, discompose; trouble; disquiet; cross, tease; fret; vex, grieve; afflict, distress, harass; perplex; pain; hurt; wound, shock; irritate; provoke; maltreat; persecute; repel; offend.

49. To be present: occupy; remain, attend, stand, inhabit, dwell; reside; sojourn; stay; live, abide; lodge; nestle, perch, roost, camp, bivouac; anchor,

settle, frequent, haunt, fill, pervade; permeate; overspread, be diffused through.

To be absent: vacate; keep away; absent oneself, *not* to inhabit; *not* to dwell, etc.

50. To produce: effect; perform, operate, make, construct, fabricate; manufacture; weave, forge; coin, carve; chisel; build, raise; ·edify; erect; establish; compose, organise; institute; create.

To destroy: sacrifice; demolish, overthrow, overwhelm; eradicate; extirpate; crush, quell, batter, suppress; dispel, engulf, erase, lay waste; ravage, dismantle, devour; devastate; exterminate; extinguish, annihilate.

51. To request: ask; beg, crave, pray, petition, solicit; prefer a request, call upon; make application; make bold to ask; invite; entreat; beseech, supplicate; implore; conjure; adjure; invoke; appeal to; urge; importune; demand.

To deprecate: protest, expostulate, enter a protest, intercede for.

52. To see: behold; discern, perceive; descry, spy; look; view; peer; peep; pry; scan, survey; reconnoitre; inspect; recognise; mark; regard, watch; contemplate; speculate; discover; distinguish.

53. To spread: disperse; scatter; distribute, diffuse; disseminate; shed; sow; broadcast, sprinkle.

To recede: retire, retreat; withdraw; shrink; decamp; bolt; run away, abscond.

54. To solidify: consolidate ; congeal , coagulate, curdle; crystallise, petrify; condense; thicken; squeeze, compress; ram down.

55. To teach: instruct; enlighten, edify; inculcate; instil; explain, expound; lecture; preach; educate; train; discipline; drill, exercise; direct, guide; initiate.

56. To think: reflect; cogitate; consider; deliberate, speculate; contemplate, meditate, ponder, muse; ruminate; study, digest; discuss

57. To travel: journey, walk; march; stalk; ride; drive; perambulate; flit; migrate, emigrate; rove; prowl; roam; range, wander, ramble; stroll; saunter; step, promenade, traverse

Adjectives.

58. Abrupt: steep; rugged; rough; craggy; precipitous; sudden, unexpected; sharp.

Even: smooth; level, plane; equal, uniform; equable; regular, unvaried, symmetrical, alike

59. Active: brisk, quick; prompt, alert; zealous; keen; enterprising, industrious; assiduous; diligent, persevering; indefatigable, energetic

Inactive: unemployed, deliberate, calm; indolent, idle, languid; dilatory, listless, passive, dormant

60. Beneficial: valuable, serviceable, profitable; precious, good, harmless, estimable; expensive

Hurtful: injurious; mischievous, pernicious; bad, unprofitable, obnoxious; venomous, destructive.

61. Bright: vivid, lustrous, luminous; shining, gleaming; scintillating, flashing; pellucid; irradiating, twinkling; coruscating, lucid; resplendent, beaming, dazzling; sublime; magnificent.

Dim: dull; dingy; faint, cloudy, misty; foggy, lowering, lurid, gloomy; overcast, sombre; obscure

62. Cautious: wary; careful; heedful; stealthy; prudent; circumspect, discreet; cool; steady; self-possessed; politic

Rash: headstrong, wanton; reckless; desperate; wild; precipitate, Quixotic; imprudent, indiscreet; incautious; improvident; venturesome.

63. Celebrated: famous; glorious; illustrious, renowned, noted; distinguished, popular; notorious.

Unhonoured: inglorious; mean, disreputable, despicable; undignified, infamous; ignoble; degraded, contemptible.

64. Certain: sure; assured; positive; inevitable; unavoidable; unerring, infallible; indubitable, indisputable, uncontested, undeniable; incontrovertible; undoubted, unanswerable; irrefutable; authoritative.

Uncertain: doubtful, dubious; precarious, casual, indecisive, undecided,

unsettled; vague; indefinite; ambiguous; undefined, puzzling; enigmatic; questionable; hypothetical; fallible, fallacious, suspicious, unconfirmed

65. Cheerful: bright, hearty, lively; vivacious; blithe, sprightly; mirthful; jolly, jovial.

Cheerless: joyless; dull; sad; frowning; low-spirited; disconsolate; forlorn; desolate, comfortless.

66. Choice: fine; superior, excellent, exquisite, inestimable; invaluable; priceless; incomparable, peerless; rare, select; expensive

Hateful: odious; detestable, execrable, abominable; loathsome; repulsive.

67. Clean: pure, spotless, immaculate, unstained, unsoiled, unsullied; spruce, tidy, washed; swept; purified.

Unclean: dirty, soiled; dusty; unwashed, unswept; coarse, foul, impure; offensive; abominable; corrupt; tainted

68. Clever: intelligent; sharp; shrewd; quick; sagacious; keen; expert; skilful; dexterous; adroit.

Stupid: unintelligent; dull, weak; stolid; childish; puerile; inexpert; unskilful.

69. Constant: stable, invariable; unchangeable, permanent, durable; fixed; steady, immovable

Inconstant: variable, changeable; unstable; vacillating; restless; fickle; wayward.

70. Elevated: lofty; tall, high; towering, raised; crowning, mountainous; aerial.

Low: flat; level; even, smooth; uniform, equal, regular, unvaried, symmetrical

71. Expert: dexterous; adroit, apt, sharp, handy; deft, quick, smart, nimble; ambidextrous; skilful

Inexpert: unqualified, incompetent, disqualified, inapt, raw; inexperienced, unskilful

72. Fair: lovely, favourite; attractive; engaging; prepossessing; captivating; fascinating, charming; exquisite; handsome; graceful; lovely.

Odious: hateful; horrid, unpopular; repulsive; offensive; nauseous; nasty; abominable; distorted; grotesque

73. Generous: unselfish; disinterested; liberal; princely; magnanimous, philanthropic; hospitable; charitable

Selfish: mean; mercenary; miserly, ungenerous; covetous; avaricious, greedy; parsimonious

74. Handsome: graceful, lovely; beautiful; elegant; fair; refined; comely; delicate; attractive; prepossessing

Plain: gross, ugly, inelegant; unsightly; ungainly; uncouth; clumsy, awkward, grotesque, distorted

75. Hard: rigid; stiff; firm; unyielding; inflexible; solid, adamantine, harsh, cruel

Soft: tender; supple, pliable; flexible; tractable; yielding; ductile; malleable

76. Honest: ingenuous, straightforward, fair; artless; guileless, sincere; natural, unfeigned; truthful; veracious; candid; unreserved; frank

Dishonest: disingenuous, hollow; insincere; double-faced; hypocritical; false; faithless, artful; sly; designing; simulated; untrue.

77. Hopeful: trusting; confiding, confident; secure; sanguine, enthusiastic; fearless; unsuspecting; unsuspicious; auspicious; propitious, reassuring

Timid: afraid, timorous, fearful; shocked, nervous, diffident; apprehensive; frightened, cowed; overawed; pale, alarmed; terrified; petrified, aghast; dismayed; horrified, astounded, appalled.

78. Huge: immense; enormous, mighty; stupendous; gigantic, monstrous, preposterous; colossal, Brobdingnagian; Cyclopean.

Microscopic: impalpable; imperceptible, invisible; infinitesimal; inappreciable, Lilliputian.

79. Illustrious: glorious, honourable; eminent, exalted, noble; distinguished; august, majestic; notable; notorious.

Ignoble: inglorious; dishonourable, mean; infamous; contemptible, unhonoured, low, undignified.

80. Knowing: aware of, cognizant of; acquainted with, conscious of; conversant with; proficient in; familiar with; instructed, learned; educated, enlightened, well-informed; scholastic; known; familiar.

Ignorant: unknowing; unconscious; unaware; unacquainted; uninstructed; untutored; shallow, superficial, illiterate, uneducated; unlearned; confused; bewildered; unknown, novel; unexplored; unperceived.

81. Loud: noisy; clamorous, vociferous, blustering; riotous; turbulent, tumultuous; uproarious; stentorian.

Soft: faint; low, hoarse, liquid, whispering, gentle, murmuring, soothing

82. Merry: joyous; joyful; jolly; jovial, playful; frisky; frolicsome, jocular

Grave: serious, sedate, staid; sober, solemn; demure; grim, rueful

83. Obstinate: self-willed; wilful; tenacious, opinionated; stiff; stubborn; obdurate; rigid; uninfluenced; unyielding; intractable, headstrong; refractory; inexorable

Submissive: amenable; tractable; manageable, docile, compliant; teachable, tame

84. Patient: meek, tolerant· submissive, content, resigned, gentle, mild; calm; cool, composed, collected; placid, quiet, tranquil; undisturbed; demure, sedate, staid; sober, imperturbable; philosophic; stoical

Impatient: intolerant, restless, fidgety, irritable, vehement; violent, uncontrolled, impetuous; fiery, rampant; turbulent; irrepressible; ungovernable, uncontrollable.

85. Pleasing: agreeable, grateful; pleasant; pleasurable, acceptable; welcome; comfortable; genial.

Painful: unpleasant; displeasing; disagreeable; unwelcome, uncomfortable; bitter, undesirable, formidable; perilous; shocking, ghastly; astounding.

86. Plentiful: plenteous; copious; prolific, abundant; ample, sufficient, luxuriant; enough, inexhaustible

Scanty: bare; insufficient; pinched; meagre; slender, inadequate; deficient, famished, poor.

87. Proud: haughty, lofty, high; supercilious; inflated; disdainful, arrogant; vain-glorious; conceited; self-satisfied

Humble: lowly, meek; submissive, resigned; modest; diffident; timorous; shy; unobtrusive

88. Resolute: determined, steadfast; steady, constant, decided; persevering, dogged, unshaken; unflinching, unyielding; firm.

Irresolute: wavering, undetermined, undecided; vacillating, changeable; hesitating, unstable, unsteady, inconstant.

89. Secure: sure, certain; safe, fast, snug; fixed; sheltered, invulnerable, impregnable; reliable, substantial

Insecure: unguarded, unprotected, unsafe, defenceless; helpless; vulnerable; uncertain; unreliable; unsubstantial

90. Sensible: wise, intelligent, reasonable; sober, sound, prudent, sagacious; thoughtful

Senseless: foolish; imbecile; absurd, nonsensical; silly, irrational, imprudent, thoughtless; unsound, unreasonable, unwise, unintelligent

91. Steadfast: resolute, decided, determined; unflinching, unwavering; unchangeable, inexorable.

Wavering: irresolute, hesitating; undecided, faltering; unresolved, vacillating.

92. Strong: vigorous; robust, powerful, potent; sturdy, stalwart; hale; brawny; sinewy; athletic, hardy, cogent; forcible, invincible, Herculean; adamantine, gigantic, irresistible.

Weak: feeble, infirm; powerless, helpless, prostrate; emaciated, thin, flimsy, slight; defenceless; debilitated, incapable, decrepit; paralysed.

93. Sunny: sultry; tropical; torrid; mild; warm, genial, hot, close.

Frosty: icy; frigid, bleak; raw, chilly, bitter, biting; piercing, inclement; arctic.

94. Sweet: palatable; dainty, delicate, delicious, savoury, luscious, luxurious

Bitter: sharp; sore; acute; severe, harsh; cruel; biting, irritating; virulent

95. Vast: immense; enormous; stupendous; prodigious; indefinite; boundless; unlimited, illimitable, immeasurable; infinite

Little: small; minute; diminutive; inconsiderable; puny, petty, miniature, dwarfed; microscopic.

96. Virtuous: good; meritorious; deserving; worthy, dutiful; moral; commendable; praiseworthy, excellent, pure; sterling, noble.

Vicious: wicked; unprincipled, worthless, heartless; unrighteous, culpable; profligate; depraved, villainous; incorrigible

97. Visible: perceptible; discernible; apparent, plain; manifest; evident, obvious, clear, distinct; recognisable; palpable; ostensible, conspicuous; prominent

Invisible: imperceptible; unseen, concealed; confused; obscure; misty; indistinct, shadowy, indefinite, indistinguishable, blurred; veiled; screened; masked.

98. Wise: sagacious; sensible, calculating, thoughtful, prudent; politic.

Foolish: silly; irrational; narrow-minded; conceited, thoughtless; imprudent; absurd; imbecile; nonsensical.

Adverbs

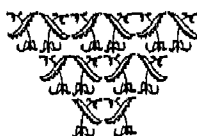
99. In a small degree: inconsiderably, slightly; minutely; faintly; feebly; lightly, imperfectly; moderately, scantily, miserably; wretchedly; sparingly; tolerably; slenderly; modestly

100. In a great degree: much, well; considerably; greatly; richly; largely; mainly; very much.

101. In a positive degree: positively, truly, verily; really, indeed; actually; assuredly, decidedly, absolutely; seriously; essentially; fundamentally; radically

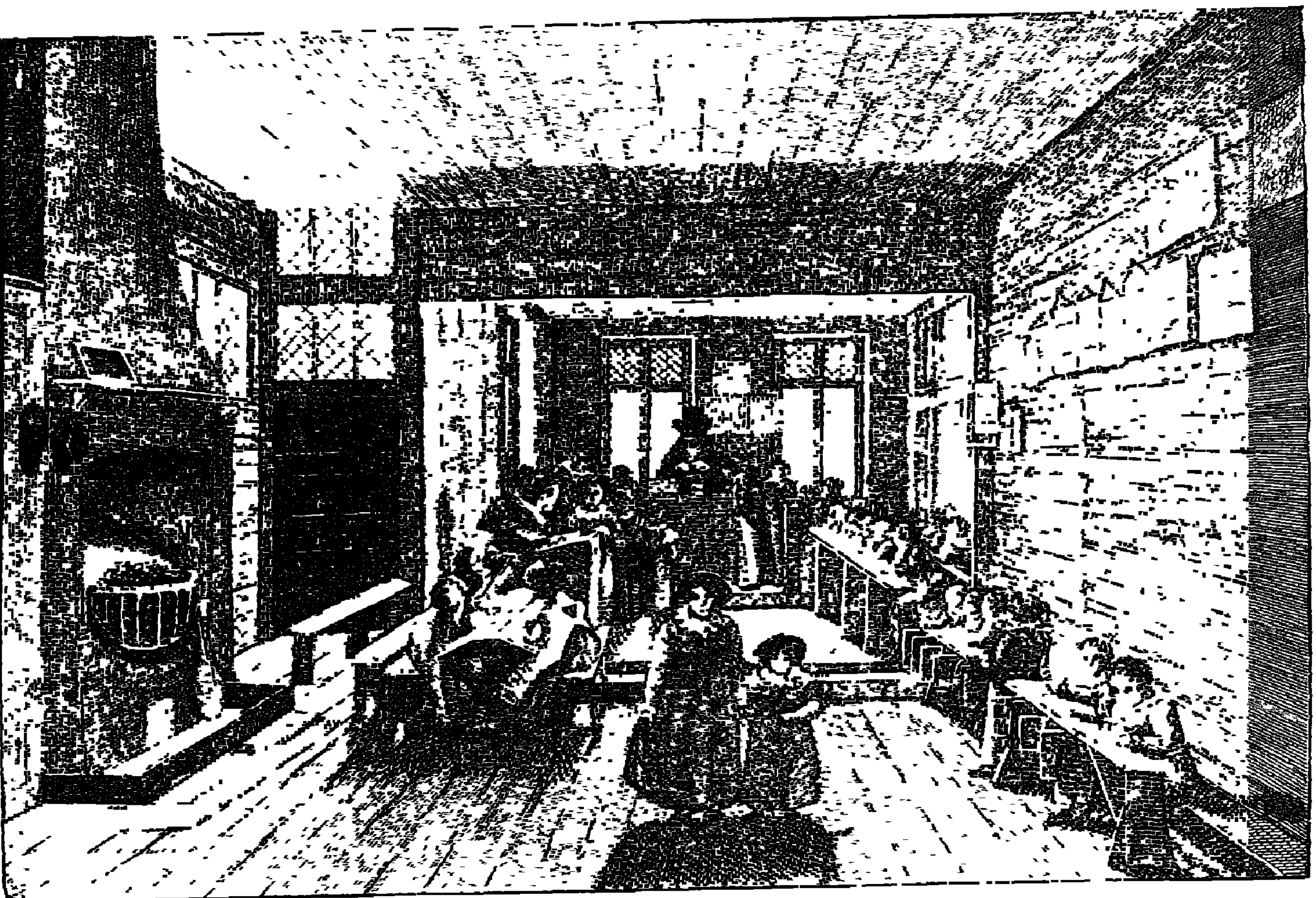
102. In a high degree: highly, deeply, strongly; mightily; powerfully, profoundly, extremely; exceedingly; excessively; intensely, exquisitely; acutely; supremely, monstrously; extraordinarily; exorbitantly; indefinitely; unspeakably; inexpressibly, unutterably; incalculably; infinitely.

103. In a painful degree: painfully, sadly; sorely, bitterly; grievously, miserably, cruelly, woefully; lamentably; shockingly; frightfully, dreadfully, fearfully, terribly, horribly



INTELLIGENCE

TESTS



Charity School under Bunyan's Meeting-House, Southwark "Londina Illustrata

INTELLIGENCE TESTS

AN article on the modern applications of educational psychology in so far as these applications claim to aid teachers to grade their pupils more exactly may still require justification. It is a commonplace of all learning that we constantly test our progress, and every teacher in a great variety of ways is habitually testing the progress of his pupils in the various subjects of the curriculum Daily, teachers are forming judgments on the abilities of their pupils, on the progress made in learning, and we all pride ourselves that our tests, together with our close observation of our pupils, enable us to diagnose their ability and their progress, so that we can grade our pupils in order of merit and advise upon their promotion and their future prospects.

This is undoubtedly true of the competent teacher, but it is only true in a vague and unscientific way. Although the discoveries of the observant teacher are of great value, they are rather the result of intuition than of the application of scientific principles, and a little thought soon convinces us that our judgments lack accuracy and precision, and we begin to realise our lack of definite standards of measurement, so definite that the same child tested by several teachers would receive the same judgment, whether we were testing the mental capacity or the degree of progress in any particular subject.

Now, all teachers realise the necessity of constantly testing their pupils, and any hope of obtaining more precise and accurate measurements of both a pupil's intelligence and a pupil's progress is surely to be welcomed, and it is just this hope which modern educational psychology offers us It claims to put into our hands tests which will give precision to our measurements. It claims to enable us to grade our pupils according to their inherited mental capacity, to test with scientific accuracy varied teaching methods, and also to measure more accurately the rate of progress made by pupils in their school work

If these claims are true, such aid should be welcomed by teachers and a close study of the grounds for these claims is obviously a duty But a still more important reason why every teacher ought to investigate carefully and critically the claims of modern psychology lies in the fact that the new methods of grading pupils claim to eliminate injustices to the child. No teacher of experience can deny that the age-old methods of testing children frequently fail to do full justice to the child. Over and over again pupils whose inherited intelligence is of a low standard have been classed as lazy or worse, and punishments of varied kinds have been their lot. Grave injustice has often been meted out simply because we did not possess methods of sufficient accuracy to grade correctly, and we cannot deny that often serious errors have caused more or less lasting educational injury On the other hand, promising pupils have been unjustly retarded, because we had no accurate measure of their intellectual capacity and kept them occupied with tasks which did not fit and satisfy their mental growth No wonder boys grew slack and girls grew self-satisfied We had failed to find their needs Others were unduly forced to accommodate themselves to what we, in our ignorance, thought (without really accurate diagnosis) was the rate at which they should learn. Either bribery or fear of punishment or both were our weapons, and these unfortunates also sustained educational injury and often left school branded as slackers or worse, and with a hatred of school and education, yet we prided ourselves on our zeal for an educated democracy

and our passionate devotion to a noble profession.

Obviously, then, the first essential for correct grading of children is an accurate measurement of the innate intelligence of each pupil, so that we may know something about the rate at which each pupil can hope to learn, and what kind of a result we can expect, if our teaching methods are suited to the pupil.

The discovery of such a mental measurement is a scientific romance of the twentieth century and one of the most important results of the new science of experimental psychology. To those who wish to know how, after many false trails had been followed, the problem was finally solved, Dr. Ballard's *Mental Tests* is strongly recommended, or the Ministry of Education Report on *Psychological Tests of Educable Capacity* (H.M. Stationery Office, 2s) It is sufficient for our purpose to record that the French doctor and child psychologist, Alfred Binet, published his first series of intelligence tests in 1905, after fifteen years of patient research These tests, with revisions and alterations in 1908 and again in 1911, are the real beginnings of mental testing. "Binet succeeded in bringing psychology down from the clouds and making it useful to man" He started from the assumption that just as we differ in physical endowments so we differ in inherited mental ability, and that the teacher must fail who attempts to ignore this Each child is born with a certain grade of intelligence and it is the task of the teacher to attempt to develop this native capacity to the best possible degree. Binet's research also proved conclusively the falsity of a very old belief, still current among teachers, directors and even inspectors, namely, the belief that good teaching diminishes the differences between the bright and the dull pupils in a class. All educational psychology proves conclusively that the very reverse is true, and that the better the teaching is fitted to the mental capacities of our pupils the differences in their attainments will increase more or less proportionately with the length of time they are under instruction. Thus, if the pupils tested are very young, the differences in their mental capacity are small, but year by year the gap between the bright and the dull widens, and this continues throughout their school careers.

Further, Binet, besides finding how to test a child's intelligence by a series of oral questions, found, by trying his questions on thousands of children, that he could arrange them in groups suitable to the various ages of the children tested. This is the standardisation which makes it possible to estimate whether a child is of normal intelligence, or subnormal, or above normal, indeed, we now have a scale which allows us to group pupils in intelligence ages as distinct from chronological ages. As Professor Terman explains, Binet's "crowning glory" was this standardisation of his tests on the principle of age He did not, as we teachers so often do, decide what questions he thought a child of any given chronological age should be able to answer, but set himself the task of finding out just what questions normal children of any given chronological age *were* able to answer, and, by careful testing of thousands of children, arrived at his series of tests for each school age from three years to fourteen years. By use of this series we can find the mental age of a child as distinct from its chronological age, although of course in the case of the normal child these two ages agree.

It is from this series of tests that all modern mental testing has sprung In England, Dr Cyril Burt, working more or less independently of Binet, found that intelligence could be tested and accurately assessed, and it is to Dr. Burt that we owe the British adaptation of Binet's tests. To-day we have, in addition to the individual oral tests based on Binet's researches, a great variety of tests at our service, and an extension which goes far beyond school. Vocational tests have been constructed which are proving of great value, and psychology is now the accepted handmaid of industry and commerce.

In the educational realm we must distinguish clearly between tests of intelligence and attainment tests which aim at measuring progress in school subjects.

The compilation of all such tests is, in the main, of course the province of the expert psychologist, but every teacher should know how to apply intelligence tests, whether these are individual oral tests or group tests Further, every teacher should realise that the standardisation of any series of tests is of vital importance and the validity and accuracy of the series depends on sound mathematical principles. The method of standardising is interesting and easy of comprehension. We aim at finding a series of tests which will measure children of any school age, e.g. eleven years. Further, we want our series of tests to place these pupils in order of intelligence, also to mark off the mentally defective on one hand, and the supra-normal on the other. Having constructed our tests, they are "tried-out" on thousands of children whose school age is the one chosen. For each test a graph is drawn, and, if the graph shows normal distribution, we know the test is suitable (It generally happens, however, that several of the tests prove to be either too easy or too difficult and have to be eliminated—a clear reminder that no teacher can say, for certain, that such and such a test is suitable for such and such an age. Already the compilers of other examinations are realising the necessity of standardisation of their question papers, if justice to the scholars is to be achieved) Having proved the validity of our remaining tests, we can now make a graph of the total results, and this will give us a scale of marks to arrange the pupils in order of intelligence.

It will be seen from this that standardised intelligence tests do not depend on the opinion of the teacher or examiner, and subjective judgments and prejudices are eliminated. This is especially true of Group Intelligence Tests, where the pupils are given a printed series of questions and write their answers, the teacher or examiner being purely an invigilator and timekeeper. What then can we claim are the ways in which Intelligence Tests can be of service to acting teachers?

First, we can place the accuracy with which these tests find out the mentally defective children who should never, for their own good alone, be taught with normal children, but should always be either in Special Schools, or Departments or Classes with a special course of training As all teachers and social workers know, this is a very serious problem, especially when we remember the very high correlation between the mentally defective and delinquency. This fact makes early segregation and special training a national duty, and teachers have a responsibility to the community to find early in school life the defective, although the final verdict must always rest with the medical psychologist (whom every Education Authority should employ). As Professor Terman says, "Not all criminals are feeble-minded, but all feeble-minded are, at least, potential criminals." A special danger is the fact that many defective children are prepossessing, and their backwardness often makes a strong appeal to the sympathy of the teacher, who becomes prejudiced against admitting that these children are unsuited to the curriculum fitting normal children.

An intelligence test, however, will *definitely* answer the debated question involved, as it is now known, after innumerable careful investigations, that, whereas the mental age of the vast majority of our pupils varies on the average about $\frac{1}{10}$ of the chronological age, the average for these unfortunates is about $4\frac{1}{2}$ times as great, and it is quite impossible for them to "keep step" with their fellows of the same age.

Then, at the other end of our scale, is the problem of the children of distinctly superior intelligence. Tests have proved over and over again that teachers are constantly failing to realise that these children have a claim to special attention and special treatment They are almost always found to be the *most retarded* in our schools—in forms

or standards below those for which they are intellectually fitted, and, unfortunately, the higher up the school these children have gone before they are discovered, the more difficult it becomes to promote them into suitable classes or forms. This difficulty would be largely eliminated, if they were discovered early by intelligence tests, and we must never forget that these pupils are of enormous value to the State, as from them should come our leaders in all national activities. How many such children are "eating their heads off" in classes where the work to be done is not stiff enough to suit their mental calibre? Surely a realisation of this problem should slay for ever in every school in the land "promotion by age" Also, mental testing is one of the justifications for grading Primary School pupils of 11+ into varying types of schools under the Hadow Report. It is worthy of mention that the number of children of superior intelligence is approximately equal to the number of mentally defective. Acting teachers seldom realise this fact, which proves rather clearly that we can find our backward pupils but often fail to find the brilliant ones The main value, however, of intelligence testing is its help in grading more accurately the large bulk of our pupils—the normal, and in constantly making us realise that we must always be on the alert to compare the chronological and the mental ages of our pupils. Class teachers are so apt to think of the pupils in their class as if they were all of the same school age in years and months, forgetting that, often in the same class, the ages may vary by many months, and it is a wholesome corrective to draw up a list of our pupils in what we consider to be their order of merit without reference to their actual ages, then to give an intelligence test, make the necessary allowances for age variations, and see how our first list compares with our second (The same thing can be done of course with tests of attainments) The result invariably shows that in some cases we are unjust or over indulgent to certain pupils, because we have forgotten to allow for age variations. The results also bring us face to face with problems concerning individual pupils that otherwise might escape our attention

Still another use of these tests is to place correctly new children entering our schools. Here we are apt to be too critical, often to the injury of the newcomer

We cannot fail to gain a better understanding of our pupils if we have got a clear insight into their mental equipment. Indeed, it is true to say that, apart from moral character, there is nothing so significant for the child's future progress as its grade of intelligence, and, this being the case, it is the duty of every teacher to find a correct estimate of each pupil's mental age

It is important at this point to note that mental age does not increase in exact proportion to chronological age—thus, a 7 year old child with a mental age of 7 years 6 months, i e. 6 months in advance of its chronological age, does not remain 6 months in advance as he grows older The difference *increases*, just as the variation of the two ages for a backward pupil also widens

This is the reason for the adoption of an "intelligence quotient" rather than "mental age." The quotient remains constant, because it is obtained by dividing the mental age by the chronological age and expressing this as a percentage, where 100 per cent represents the normal average child whose mental and chronological ages are the same. Thus a child of 8 years with a mental age of 7 years 3 months (i e. 9 months retarded) has an intelligence quotient of $\frac{7\frac{1}{4}}{8}\times 100 = 90+$, while an 8 year old with a mental age of 8 years 9 months (i e 9 months advanced) has an I.Q (as it is abbreviated) of $\frac{8.75}{8}\times 100 = 109+$.

It is of value to know that mental defectives generally have I Qs below 75, and all between 70 and 80 should be carefully examined by expert psychologists Most standardised tests give tables from which, on the completion of the test, the I Q of

each pupil can be readily obtained. These tables of norms (as they are called) have been obtained by "trying-out" the test, and finding by exact mathematical methods the normal results for each age (months generally being taken into account) Using such a standardised test with its table of norms any teacher who will follow the directions for giving and marking the test can readily find the I.Q. of every pupil and so obtain the first essential for understanding the mental calibre of his pupils If attainment tests are also given in the various subjects of the curriculum, an invaluable amount of accurate information is at the teacher's disposal which cannot help but prove of immense value. As Dr. Ballard says, we have a means ready at hand "to make every teacher his own critic, and the teacher's critic (whether inspector, headmaster or parent) a just and discriminating judge." We also have a means ready at hand to fit our education to the mental capacity of each child, instead of attempting the utterly impossible task of fitting every child to our preconceived ideas of what he ought to be able to do. "Catch them (our pupils) as young as possible. The secret of good organisation is to put each child in the class where he will progress at his natural pace. And his natural pace is determined by his intelligence . . . Perhaps the safest guide is a two-fold new examination, one part to measure the entrant's intelligence, and the other to measure his attainments."—Ballard's *The New Examiner*

To those teachers who wish for guidance on the history of intelligence tests and their value in education the Ministry of Education report, already referred to above, is strongly recommended. It is the report of a very strong and thoroughly representative Consultative Committee, with Sir W. H. Hadow as chairman, whose terms of reference were, "what use can be made in the public system of education of psychological tests of educable capacity?" The report consists of over 200 pages of invaluable evidence, and every teacher should know the final conclusions and recommendations of this report, the unanimous findings of the Consultative Committee after receiving evidence or memoranda from about one hundred acknowledged authorities on educational psychology or its applications to school problems

By far the most important book dealing with the validity of intelligence tests and the debated problem as to what it is that these tests measure—"general intelligence" as it is called—is Professor C Spearman's *The Abilities of Man, their Nature and Measurement* (Macmillan, 16*s*). Here we have brilliantly and lucidly described the almost innumerable researches which have been carried out in all parts of the world, but more particularly by Professor Spearman and his team of research workers, into every phase of man's intelligence. Moreover we are presented with the mathematical data which alone can verify the principles expounded. Every teacher should attempt to digest this epoch-making book, although only those with a certain amount of mathematical training will be able to appreciate fully the strictly scientific proofs which Professor Spearman brings to his aid.

For those who wish to be able to calculate correlations between standardised tests and their own placings of their pupils but whose mathematical training is not very advanced Professor Thomson's *How to Calculate Correlations* (Harrap, 2*s*) is a non-mathematical book of great value which can be strongly recommended

A concise and simply written book dealing with "the nature, validity and methods of application of mental tests, and the conclusions to be drawn therefrom," but containing no tests, is *Methods and Experiments in Mental Tests*, by C A Richardson, (Harrap, 3*s*. 6*d*) This is a useful introduction to the whole subject of testing and to the method of obtaining norms and I.Qs

All teachers should read with the closest attention *The Measurement of Intelligence* by Professor Terman (Harrap, 7*s*. 6*d*.), as it not only gives his revision of Binet's tests to suit them to American children (as Dr.

Cyril Burt has done for English scholars), but it also contains a mine of information on the multiplicity of uses to which Binet's tests have been put, together with numerous individual cases of backward and brilliant girls and boys whose school and college careers have been "followed-up" for years after their I Qs. were found. Many of these cases are of intense interest to teachers wishing to know what possible results may be derived from the use of such tests on their own pupils, and what injustices to pupils they may be able to avoid by more intelligent and scientific grading in their schools. To make Terman's book complete for the acting teacher who wishes to use his revision of Binet's tests (called the Stanford revision, as Terman is Professor of Education at Stanford University) it is necessary to obtain the test material (i.e. the actual tests without the explanatory instructions included in the book) It is essential to add that the Stanford revision contains tests for children from 3 years old to 14 years, as well as tests for the average adult and the superior adult. It is also of value to know that Binet's tests are admittedly the most satisfactory way of testing very young children, but they have to be applied *individually*, and require careful attention to instructions on the part of the teacher using them, so that all children tested are given *exactly* the same treatment.

An English book, *The New Examiner*, by Dr. Ballard (Hodder & Stoughton, 6s), contains a powerful criticism of our traditional methods of examination, a vindication of mental tests, together with much useful guidance on intelligence and attainments tests It also contains a sound Group Test for Juniors.

Dr. Ballard has also two earlier books by the same publishers which also give actual material for testing pupils, besides explaining how the tables of norms are obtained and how the graph of a newly compiled test proves its suitability or otherwise· *Mental Tests*, 6s., which contains Dr. Burt's Translation and Revision of Binet's tests; *Group Tests of Intelligence*, 6s , which gives an account of some of the earlier group tests.

For those who want to understand in some detail the method of compiling tests and the psychological problems behind testing, no better guide can be recommended than a work by our most experienced educational psychologist, Dr. Cyril Burt, whose investigations into the problems of intelligence and whose experience of mental testing are known to educationists in every country in the world *Mental and Scholastic Tests* (King & Sons, London, 21s.) not only contains the complete revision of Binet's tests with full directions for its use, special directions for each individual test, but also a detailed account as to the means by which the validity of the tests has been proved It deals with every aspect of the uses to which the tests have been put and shows clearly the results obtained when used to demarcate normal children from defectives and how they are used to find psychological reasons for juvenile delinquency Dr Burt also deals with supplementary tests of intelligence, both oral and written, both individual and group tests. Another section of his work treats of his investigations into the need and uses of attainments tests (scholastic tests as he calls them), and gives invaluable practical help in the examination by standardised tests of reading, spelling, arithmetic, writing, drawing, handwork and composition, with norms for these tests

As an indication of the vast literature on Intelligence Tests as applied to Education, the Ministry of Education Subject List of books and articles dealing with these occupies thirty-three pages of their catalogue, while the titles of other educational tests of special intellectual capacities, emotional and character tests and tests for blind, deaf and dumb, and mental defectives take up another twenty-three pages, followed by thirty-eight pages listing attainments tests and twenty-three pages of books and articles on vocational or trade tests The complete list, which is simply a catalogue and contains no other material whatever, runs to 200 pages, showing how intensive has been the

development of mental testing since the first publication of Binet's material in 1905.

Mental tests wisely used can be of untold value, and should be in the armoury of every practising teacher. Too long have teachers been content to work more or less blindly, with little or no accurate estimate of the fundamental facts of human inherited endowment and child psychology. Too long has the work of our schools been carried on under conditions imposed by those in authority, instead of being firmly based on the undeniable facts of the child mind Modern educational psychology with its research into the measurement of intelligence and its consequent insistence that education must fit the child has given us the starting-point of a sound philosophy of education—the sacredness of individuality and the right of the child to a nurture to fit its inherited nature—and the hope of an educated democracy can only be attained when we build on the actual facts of inherited endowment—the innate intelligence of each individual child

As Browning so truly says,—

"The common problem, yours, mine, every-
one's
Is not to fancy what were fair in life
Provided it could be,—but, finding first
What may be, then find how to make it fair
Up to our means,—a very different thing!
No abstract intellectual plan of life,
Quite irrespective of life's plainest laws,
But one, a man who is a man, and nothing
more,
May lead within a world which (by your leave)
Is Rome or London—not Fool's Paradise."

The following examination papers are reprinted by the kind permission of the authorities named at the head of each section.

G. KEITH THOMSON.

LEICESTERSHIRE COUNTY COUNCIL

Group Test—Set I.

Test 1.

Print the letter T and put before it the first vowel and after it the second vowel in the alphabet.

If 6 is less than 7 put a D between two A's unless 7 is also less than 8, in which case put I between two D's.

If the days in December and May added together make 60, print CORRECT, if 61, print DOUBTFUL; if 62, print WRONG

What is the letter which comes next in the alphabet after the letter which in this sentence appears a second time nearest the beginning?

How many EVEN numbers less than 20 are there in the line of figures below?

15, 18, 24, 32, 13, 17, 41, 6, 13, 20, 27, 14, 8, 11, 27, 10, 67.

Test 2.

Make as many different words as you can of FOUR letters each from the letters E, T, S, A, merely by placing them in different orders. No letter must be used twice in the same word, and ONLY the letters E, T, S, A.

Test 3.

Draw a sketch of the front of a house which has—

Two separate chimney stacks;

Two windows on the ground floor with a door between them,

A semi-circular arch over the door;

Three windows on the upper floor, the middle one being immediately over the door.

Test 4.

Mention five persons in HISTORY. Add the name of an event connected with each of these persons. The first one is done for you

(1) HAROLD BATTLE OF HASTINGS
(2)
(3)
(4)
(5)
(6)

Test 5.

You can send secret messages if, instead of the letters below, you write the numbers immediately under each letter:—

A	C	E	F	I	L	O	R	S	T
1	2	3	4	5	6	7	8	9	0

thus TAIL is written 0156; RATS is written 8109. Now send the following message, writing the numbers below each word The first word is done for you

SELECT LACE FOR SISTER ALICE
936320

Now find the meaning of the following groups of numbers —

26318, 908150; 8144639, 635239038;

Test 6.

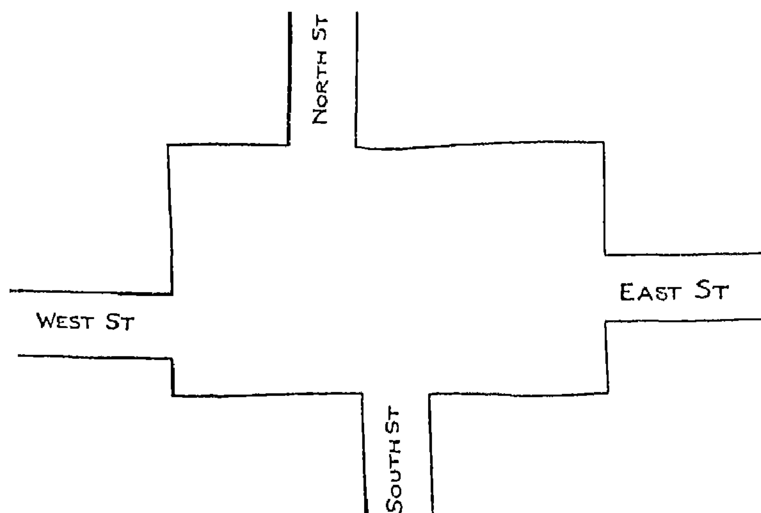
Below are some well-known proverbs from which some words have been omitted Put ONE word in each bracket:—

(i) Too many ( ) spoil the ( ), yet a ( ) in time saves ( ).
(ii) Every ( ) has his day, but a ( ) stone gathers no ( ).
(iii) Strike while the ( ) is hot, but ( ) before you leap.
(iv) ( ) vessels make most ( ).

Test 7.

You enter the Market Place from East Street under an old gateway, in the centre is a fountain, on the North-West corner stands a picturesque inn, the Town Hall is between South Street and the South-West corner

On the plan mark the gateway with a G, the fountain with an F, the inn with an I, and the Town Hall with a T



Test 8.

In what country is Mount Everest? ( )
In what book does Man Friday appear? ( )
Which is our smallest wild bird? ( )
Who introduced tobacco into England? ( )
When is the shortest day? ( )
What tree has black buds? ( )

Test 9.

Complete the following. The first is done for you

Example:—

{John Smith is the father of Tom Smith.
{Tom Smith is the son of John Smith.

{Mary Brown is the niece of John Jones.
{John Jones . . ... of Mary Brown

{Birmingham is 50 miles S W. of Nottingham.
{Nottingham . .. . of Birmingham.

{15 is a multiple of 3.
{3 . . . . .of 15.

{Henry learnt singing from Mr. Wood.
{Mr Wood .. . . Henry singing.

{Richard, though $1\frac{1}{2}$ inches taller than Tom, is 2 years the younger.
{Tom, though . .. . . . than Richard . .

Test 10.

Mr. T. is a teetotaller; Mr. N. is a non-smoker, Mr. V is a vegetarian They have just finished dinner Write down in each of the blank spaces below the INITIAL only of the man whose name should appear there.—

Mr , who had dined well on roast beef, was smoking his pipe when Mr said, "I must just go to the post" After the departure of Mr. Mr. said to Mr. , "How ill that chap looks; some honest English roast beef would make another man of him." Mr. replied, "Well, you don't look too fit yourself, a glass of wine would do you good." At this moment Mr. returned and said to Mr. , "Let me have some of your tobacco, I have left my pouch at home."

Test 11.

Look at the map on the following page. The numbers are all important towns in the county, and No 1 is LEICESTER

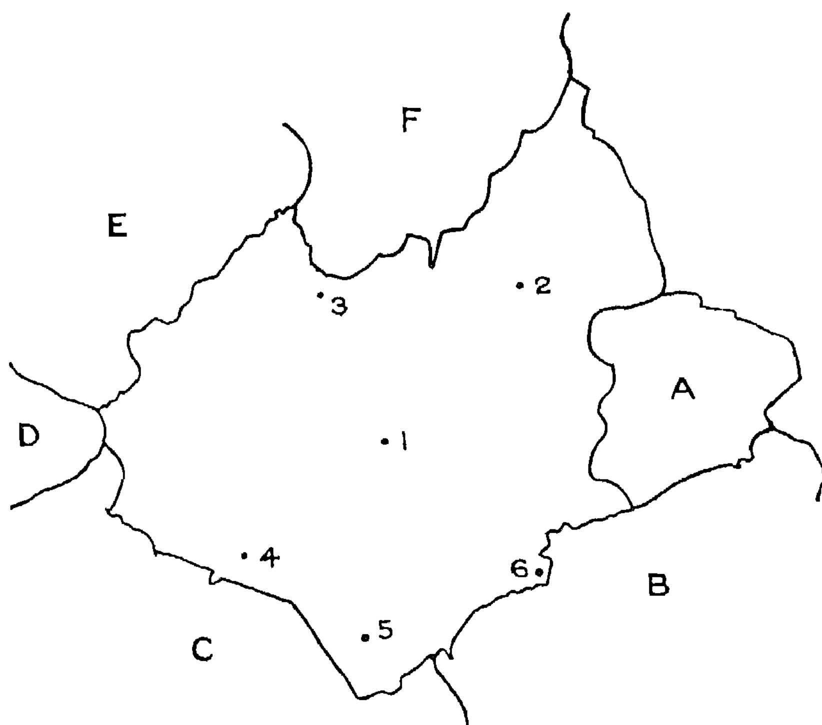
The capital letters on the map indicate surrounding counties

Write down here the towns indicated by each number

1. LEICESTER
2 . .
3 . .
4. .
5. .
6

Now write down here the counties indicated by each capital letter.

A . . . .
B . .
C . .
D . . .. . .
E .. ..
F ... .
G . .



Group Test—Set II.

Test 1.

(*a*) If 8 times 9 makes 73, write YES, if not, write NO.

(*b*) Share out 5 apples between 3 girls, so that each girl has an ODD number of WHOLE apples

(*c*) Tom is 4 days older than I am I was born on Christmas Day On what date was Tom born?

(*d*) Isaac Armstrong signed his name 12 times How many times did he write the first letter of the alphabet?

(*e*) If $7 \times 6 = 42$ and $52 \div 4 = 12$ are both correct, write NO, if not, write YES

(*f*) Print the letter E, then put the last CONSONANT of the alphabet before it, and the first CONSONANT after it.

(*g*) If there are more inches in a foot than cwts. in a ton, print your surname, if not, print the name of the capital of England

(*h*) Four months of the year have the same number of days. Print the name of the one of these four which has the least number of letters.

(*i*) Suppose to-day was Sunday. What day of the week would it be 2 days before to-morrow?

(*j*) Mary is taller than any of her sisters, Eva, Jane, or Winnie Winnie is taller than Eva, but shorter than Jane. Which is the shortest?

Test 2.

Look carefully at the heights and weights of the 8 men below. Then put their names in the proper spaces in the table

Name.	Height		Weight.	
Tom	5 feet	11 ins.	12 stone	10 lbs.
Sam	5 ,,	2 ,,	8 ,,	12 ,,
Dick	5 ,,	7 ,,	13 ,,	3 ,,
Bob	6 ,,	0 ,,	9 ,,	10 ,,
Jack	5 ,,	9 ,,	10 ,,	9 ,,
Bill	5 ,,	0 ,,	11 ,,	1 ,,
Harry	5 ,,	3 ,,	12 ,,	0 ,,
Fred	6 ,,	1 ,,	11 ,,	8 ,,

A man over 5 feet 10 ins is tall

A man under 5 feet 4 ins is short.

A man over 11 stone 10 lbs is a heavyweight

A man under 10 stone 0 lbs is a lightweight.

One of the names is already placed in its proper space.

TABLE

	Heavyweights	Middleweights	Lightweights
Tall		FRED	
Medium Height			
Short			

Test 3.

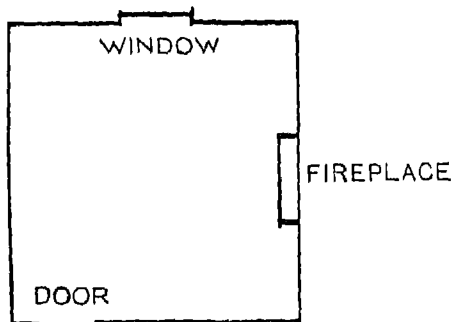
Study the railway timetable below, and then answer the questions set The first is done for you

Leaves Mudford	Arrives London.
(1) 9 20 a m.	11.20 a m
(2) 11 40 a m.	1 35 p m
(3) 1 20 p m.	3 35 p m.
(4) 3.40 p m.	5.30 p m.
(5) 5.40 p m	7 50 p m.

(1) Which is the slowest train? (No 3 train)
(2) Which is the quickest train? ( )
(3) Which 2 trains are both on the way from Mudford to London at the same time? ( )
(4) Which of these trains would you see if you stood on the platform at Popton (half-way from Mudford to London) from 2 p m. to 2.45 p.m.? ( )

Test 4.

Below is the plan of a room with the positions of the door, window, and fireplace already shown. When I stand at the door I see a bookcase (B) in the far corner to the right



of the window, and a round table (R) in the far corner to the left of the window When I stand with my back to the window I see a sideboard (S) touching the middle of the right-hand wall When I stand with my back to the fire I see a large table (T) in the middle of the room, and slightly to my left, half-way between the fireplace and the door, there is an armchair (A) Do NOT draw the objects named, but put B, R, S, T and A where the pieces of furniture should be.

Test 5.

From the articles named below make 2 lists of things found (1) only in School, (2) only in an ordinary house Use ONLY the articles given below

Books	Dressing-table
Blackboard	Wall maps
Bed	Inkpot
Register	Chalk-box
Wardrobe	Clock
Cupboard	Easel

Only in School.	Only in house

Test 6.

Below are two columns A and B Column A is complete, and the first word of Column B is given you Thus if A is doctor to B, then B is the patient of A Now fill in Column B, so that there is a similar relationship for each pair of words on the same line.

A	B
Doctor	Patient
Parent	
Teacher	
Uncle	
King	
Shopkeeper	
Employer	
Leader	
Preacher	
Host	
Lawyer	

Test 7

Study the list below, and then answer the questions asked.

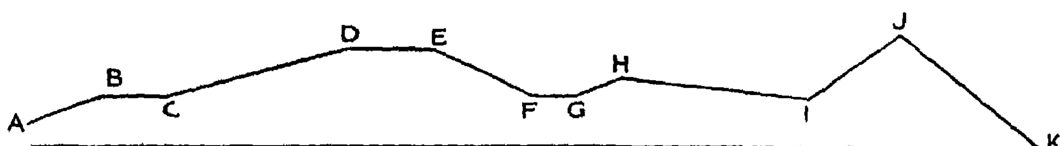
NAME	BORN.	DIED.
Alfred	A D. 751	A.D. 813
Edgar	A D 830	A.D. 872
Cedric	A.D. 1035	A D. 1071
Henry	A.D. 1089	A.D 1160
William	A D 1142	A D. 1205
John	A D. 1311	A.D. 1372

QUESTIONS.

(1) Which man had the longest life?
(2) Which man had the shortest life?
(3) Which 2 men were living at the same time?

Test 8.

The sketch below shows the side elevation of a hilly road The first question is done for you



Going from A to K, which is (1) the longest level-slope? (DE)
(2) the steepest up-slope? ( )
(3) the longest up-slope? ( )
(4) the steepest down-slope? ( )
(5) the shortest down-slope? ( )

Test 9.

Look carefully at the sums below.

(*a*) $1=1\times1$
(*b*) $1+3=2\times2$
(*c*) $1+3+5=3\times3$
(*d*) $1+3+5+7=$
(*e*) $=$
(*f*) $=$

(1) Are the first 3 sums correct?
(2) Now complete the 4th sum, setting it down like (*a*), (*b*) and (*c*)
(3) Then write out the next 2 sums in the same way as (*a*), (*b*) and (*c*) are written out.

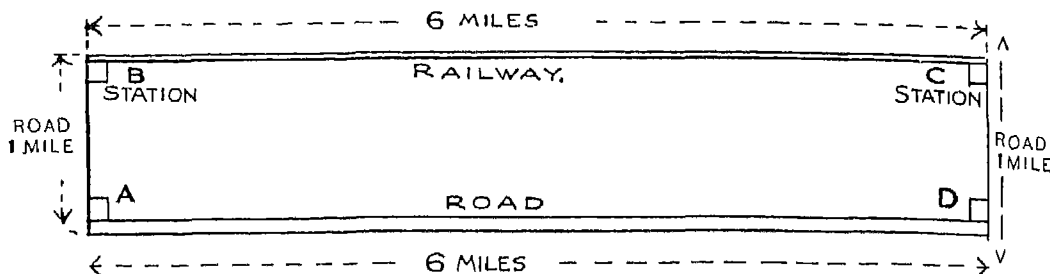
Test 10.

Mr. Brown never rides in a motor car.
Mr Jones never rides on a horse.
Mr Smith never rides on a bicycle.

Write down in each of the blank spaces below the name of the man which should appear there

Mr. , riding a horse, knocks down Mr riding a bicycle. Mr , driving a motor car, comes along, and offers Mr a lift. Mr replies, "Thanks very much Mr , but I never ride in motors I would rather ride home on Mr 's horse, if he will let me."

Test 11.



The time is 5 0 p.m Three men, Jones, Adams and Ross, are at village A in sketch above, and each of them MUST get to village D There are no vehicles obtainable anywhere near, but trains run from station B to station C. Here is part of the railway timetable.—

Leaves B.	Arrives C
5 15	5.25
5.35	5 45

Jones is in a great hurry to get to D, Adams is very tired; Ross has no money (and can't borrow any). Their ordinary rate of walking is 3 miles per hour

Write below what you think each man would do so as to reach D the same evening. If any of them goes by train, say which train he will catch

Group Test—Set III.

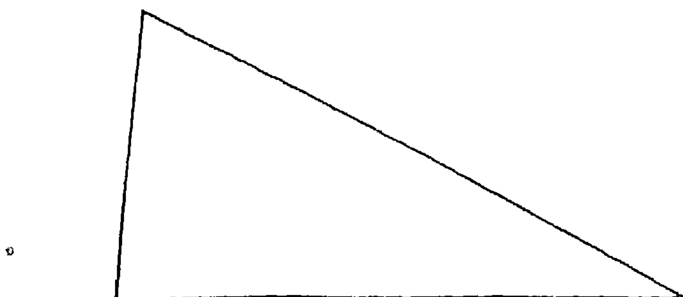
Test 1.

Below are 20 questions Answer 10 and ONLY 10 of these

(1) Who said, "England expects every man will do his duty"?
(2) Who was the father of Queen Elizabeth?
(3) Which king was killed at the Battle of Bosworth?
(4) Who introduced printing into England?
(5) Which ocean lies between Europe and America?
(6) In which continent is India?
(7) What is the capital of Scotland?
(8) On which river does Liverpool stand?
(9) What bird flies about by night and sleeps by day?
(10) Name an *animal* that flies
(11) Name the bird of which it is said, "In July away he doth fly"
(12) What are trees called which keep their leaves all winter?
(13) At what temperature does water freeze?
(14) If I turn my back to the sun at noon, in which direction does my shadow point?
(15) Which wind brings us the most rain?
(16) What is the name of the force which makes water run down-hill?
(17) Name one of Shakespeare's plays.
(18) Give the name of the little boy, in the story, who never grew up.
(19) Name a poet who lived in the Lake District.
(20) Who is now the Prime Minister of England?

Test 2.

Below is a triangle Mark the middle point of each side and join these 3 points by straight lines



How many triangles are there in all in your completed drawing?

Test 3.

(1) PRINT the last 5 letters of the alphabet.
(2) Write the answer to $6 \times 12 \times 0 \times 5$.
(3) Which letter in the word LONDON comes first in the alphabet?
(4) Write the figures 2, 4 and 6 so that the largest is in the middle and the smallest is at the right-hand end.
(5) If our week began on Thursday, which day would be in the middle of the week?
(6) The names of 3 months of the year begin with the same letter. Print this letter.
(7) Print the word RIGHT If 7×8 is smaller than $150 \div 5$, cross out the middle letter, if NOT, cross out the last letter
(8) The ages of 2 boys added together make 10 years. What will their ages make if added together in 10 years' time?
(9) If iron is heavier than wood, print D between two O's, unless wood is also heavier than air, in which case write D between two A's
(10) Four boys sat on a form. Tom sat at the right end. Fred was to the right of John, but to the left of Bill. Who sat at the left end of the form?

Test 4.

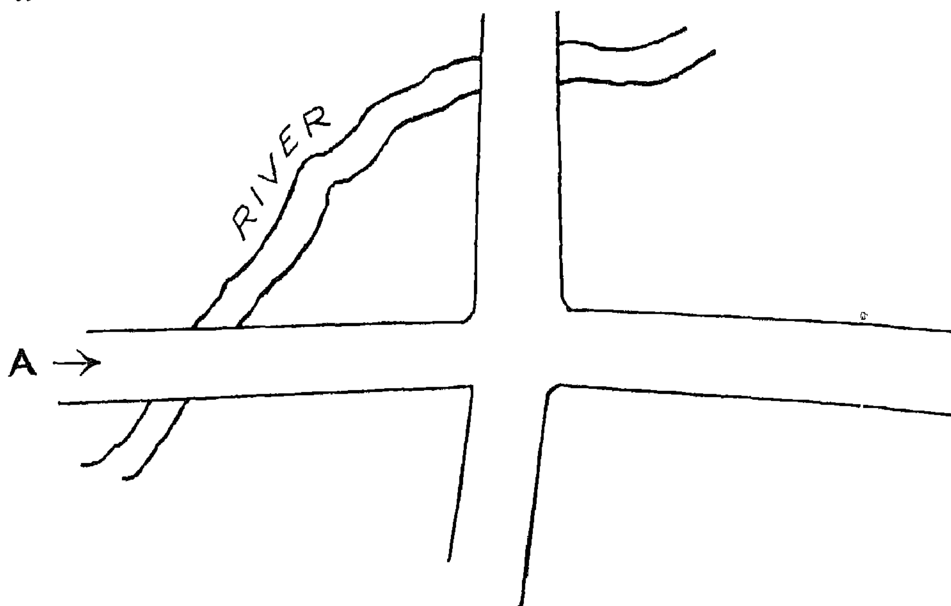
Look carefully at the diagram below. Then fill in the 6 blank spaces

	C	A	P
FRUITS	Cherry		
VEGETABLES		Artichoke	
FLOWERS			Pansy

Test 5.

Imagine you are looking at the side of a church which has a square tower at one end with a pointed steeple rising from the tower. High up in the tower can be seen 2 small square windows. At the other end of the side of the church we are looking at can be seen a doorway with a pointed arch, and between this doorway and the tower-end of the church are three long windows. Draw all this in the space below

Test 6.



In the plan of the centre of a village shown above you are to mark *by capital letters only* the positions of certain places described in the following paragraph.—
Starting from A, I crossed a bridge (B1) over the river, passed a church (C) on my right, and arrived at the cross-roads (X). Turning to my left, I passed a large hotel (H) on my right before coming to a second bridge (B2) over the river. Turning round, I retraced my steps, and, walking straight over the cross-roads, I soon came to a school (S) standing on my right. I asked one of the children to direct me to a garage (G) He said, "Walk back to the cross-roads, turn to the right, and in a few minutes you will see one on the left-hand side opposite the Post Office (P O)"
Now mark the positions of B1, C, X, H, B2, S, G, and P.O.

Test 7.

Below are the names of some of the pupils in Standards VII. and VI

VII.	VI
Henry Jones.	Henry Bates.
Richard Smith.	William Jones
Walter Harding.	Walter Mason.
James Robinson.	Robert Scott.
Kate Brown.	Ethel Harding.
Edna Bates	Violet Clark.
Jane Clark	Rose Toller.
Ethel Mason.	Jane Carter.

Peter, George, Lucy and Mary are in Standard III., and we want to know their surnames.

The surname of	Peter who has a	brother in	VII	and a sister in	VI.	must be
,,	George	,,	sister	,,	brother	,,
,,	Lucy	,,	brother	,,	brother	,,
,,	Mary	,,	sister	,,	sister	,,

Test 8.

Look carefully at the sums below

(a) (1×9)+2=11
(b) (12×9)+3=
(c) (123×9)+4=
(d) ( ) =
(e) ( ) =

(1) Is the first sum correct?
(2) Fill in the answers of (b) and (c)
(3) Then write out the next 2 sums, (d) and (e), in the same way as (a), (b) and (c) are written out, and fill in the answers.

Test 9.

In the statements below UNDERLINE the ONE word in the bracket which, if put in the blank space, would give the best answer to the statement

(1) A wolf most resembles a . (cat, dog, cow, horse).
(2) A mother is never than her daughter. (taller, nicer, younger, smaller).
(3) A plant always has . (flowers, leaves, scent, fruit, roots)
(4) A contest always has . (spectators, applause, opponents, a referee, victory).
(5) Husbands are taller than their wives. (always, seldom, usually, never, much)

Test 10.

You can send secret messages if, instead of the letters of your real message, you write the letter which comes next in the alphabet, thus—for JAMES you write KBNFT Now send the message below in this secret way. The first word is done for you

MANY HAPPY RETURNS OF YOUR BIRTHDAY
NBOZ .. ..

Now find the true meaning of the secret message below, and print it on the dotted lines

UIBOL ZPV
. .. .

Test 11.

I have some scales, but no weights. I have 12 pennies and a glass which holds half a pint.

I am told 3 things.—(1) The glass weighs 2 ozs.,
(2) 3 pennies weigh 1 oz ,
(3) 1 pint of water weighs 1 lb. 4 ozs

How would you weigh·—

(1) 2 ozs. of butter? ( )
(2) 6 ozs. ,, ? ( )
(3) 12 ozs. ,, ? ( )
(4) 10 ozs. ,, ? ( )

Test 12.

Mr. Crabb cannot row a boat.
Mr Squint ,, steer ,,
Mr. Stone ,, swim

Write down in each of the blank spaces below the name of the man which should appear here

All three men got into a boat to cross a lake. Mr. rows, Mr steers and Mr .sits in the bow of the boat. Suddenly, Mr ..

who is rowing, overbalances and falls into the lake He is on the point of drowning when Mr . dives in and rescues him. The rescued man, Mr . insists on steering, while Mr . . ... (the only dry one of the party) rows until they reach their destination.

KENT EDUCATION COMMITTEE

(Joint Examinations for the Award of Free Place Scholarships and Junior Exhibitions at Secondary Schools, Scholarships at Junior Technical Schools, the Day Technical School for Girls and the Day Trades School, and for Promotion to Central Schools)

Group Test—Set I.

Test I. 10 *minutes allowed.*

1. Write down the last two letters of the alphabet .

2. Cross out all the E's in the word at the end of this line ENTER

3. Cross out all the odd numbers less than seven

12, 9, 5, 4, 2, 6, 3.

4. Draw a circle and put the letter A inside it and the letter B on top of it.

5. Write down the names of the months beginning with the first letter of the alphabet .. . .

6. A B C D E

(1) Draw a square round the letter D.
(2) Under the letter B draw a line about an inch long
(3) Draw circles round the letters A and C.
(4) Join the circles you have drawn by a line passing over the letter B
(5) Put a cross above E and a dot below it.

7. In the following rows of figures cross out the number in each row that ought not to be there —

(1) 2 4 6 8 9 10 12 14
(2) 3 7 11 15 19 21 23
(3) 31 28 25 22 19 17 16 13

8. Mary is 4 years old
John is 6 years old
Ellen is 8 years old
Tom is 10 years old.
Fred is 12 years old.

Read what is stated above and then answer the following questions —
(1) Who is twice as old as John?
(2) Who is half as old as Ellen?
(3) Who is two and a half times as old as Mary?
(4) Who is as old as the sum of John and Mary's ages?
(5) Who is one and a half times as old as Ellen?

Test II.—25 *minutes allowed.*

1. Write A before every word which means an animal
Write B before every word which refers to behaviour
Write G before every word which means a game
Write S before every word which means anything in School.

. Impudent.	. Deer	Chalk
. . Desk.	Rugby	Hockey.
Ink.	Rebellious.	. Draughts
. Chess.	Map.	. Rude.
. Elephant	Tiger.	Blackboard
Rabbit.	. Sulky.	Lion.
Cricket.		Polite

2. Write after each word below, a word which has the *opposite* meaning or *nearly the opposite* meaning, and beginning with the letter E *All* your words must begin with E which is already put in for you. The first two are done for you.

Go out	Enter	Late	E . .
Economical	Extravagant	Odd	E . . . .
West	E .	Friend	E . . .
Full	E . .	Difficult	E
Beginning	E	Lower	E . .
Morning	E .	Blame	E .

3. Write the word meaning the opposite of NO just below the dotted line and underline the word you write.

. . ..

Draw a circle just above the dotted line and put the letter F in it, as you would see it in a mirror

4. Four boys, A, B, C and D, sat in a row in a theatre. A was to the right of C, B was to the left of C, and D was to the right of A Put the letters in the order of sitting and say whether D was to the right or left of B

5. Four roads meet, at right-angles to each other, in Maidstone, and one of them leads to Rochester I have come from the west and I want to go to Rochester. The road to the right leads to Cranbrook, while straight ahead the road goes to Ashford. In what direction is Rochester, N., S , E or W ?

6. John's birthday is on the 28th December and he is just five days younger than Harry Last year Christmas Day fell on a Sunday. On what day did Harry's birthday fall?

7. A penny weighs one-third of an ounce and a halfpenny weighs one-fifth of an ounce Three men, A, B, and C, have an argument. A said, "I would rather have a ton of halfpennies than half a ton of pennies"; B said, "I do not mind which I have, they are both of the same value"; C said, "I would rather have half a ton of pennies than a ton of halfpennies." Which, do you think, was right in his estimate, A, B or C?

8. A man leaves his house X and motors due south for 10 miles; he then turns west and goes 8 miles, he then turns north and goes 5 miles, he then turns east and goes 8 miles. How far is he from his house X, and in what direction does his house lie from where he now is?

(1) . (2) .

9. The following message was sent by code and its meaning is given under it.
Message (in code): zpvs gbuifs jt jmm, dpnf jnnfejbufmz
The same (translated): your father is ill, come immediately

Translate the following:—
nbz j dpnf up zpvs qbsuz?

Now turn the following sentence into the code:—
yes, i hope so.

10. In the following there are several words which are absurd, that is, something which contradicts what has been said already *Underline* each *word* which is absurd. *Only one word should be underlined for each absurdity.*

Mr Jones had only three daughters, whose names were Mary, James and Nellie He lived with his wife whose name was Mrs. Anderson. He was very anxious to leave enough money for his ancestors, so he spent as much as possible When his wife died she left him all her fortune so that he was quite poor, but nevertheless he put up a fine tombstone on his widow's grave His six daughters, who were now alone in the world, asked their mother to change her decision, but she said that this was impossible.

11. In the following lines the numbers or letters on the left follow each other according to some rule. You are required to find out that rule and then cross out the *two* numbers or letters in the brackets which you think should be the next two in the line.

(1) 3, 6, 9, 12, 15 (17, 19, 18, 22, 21.)
(2) 3, $2\frac{1}{2}$, 2, $1\frac{1}{2}$, 1. ($\frac{1}{4}$, 0, $1\frac{1}{4}$, $\frac{3}{4}$, $\frac{1}{2}$)
(3) C, E, G, I, K. (P, N, O, Q, M.)
(4) Y, B, X, C, W, D, V, E (R. H, F, S, G, I, U, T)

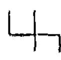
12. Below you will find five sets of figures with the number 1 below the first, 2 below the second, and so on Look at No. 1, try to keep it in mind and turn over and find it on the next page, and put 1 below it. Then look at No. 2, find it on the next page and put 2 below it. Go on and do the same with 3, 4, and 5. Then do the same with the easy drawings numbered 6, 7, 8, 9, and 10.

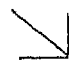
83961782 (1) 23896745 (2) 53276891 (3)

23976821 (4) 82796514 (5)


(6)


(7)


(8)


(9)


(10)

53267891	23698745	82796514	23796821	89361872
52376981	29386745	82769154	23976821	83691728
57326891	23986745	87296145	23697281	83961782
52371896	23896745	89726514	29736821	86931782
53276891	28397645	867562I4	26397812	83196782

Group Test—Set II.

Test I.—10 *minutes allowed.*

1. Below are some rows of figures You are to find out how they are made up, and then put the next *two* numbers in the brackets Here is one done for you —3, 7, 11, 15, (19, 23). You can see that they go up by 4 every time, and so the next two numbers are 19 and 23 and we put them in the brackets. Now do these.—

(1) 2, 4, 6, 8, 10, (,)
(2) $\frac{1}{2}$, 2, $3\frac{1}{2}$, 5, $6\frac{1}{2}$ (,)
(3) 2, 6, 18, 54, (,)

2. The following words are to be arranged in alphabetical order. Show this order by putting the numbers 1, 2, 3, and so on, on the dotted lines before each word. Notice that, if two words begin with the same letter, attention must be given to the second letter or even to the third.

.	arrow		exercise
	chair		answer
. ..	. . floor	. .	fender
..... .	.bed	.	bridge
. . .	sofa	. .	cheap

3. When we want a secret message to be sent between ourselves and someone else, we write it in a "code." We disguise the words by some previously arranged signs for the letters. A code can be made by using for each letter in the word the letter coming *after* it in the alphabet. Using this, write the following in the code —

COME TO ME.

. . ..

4. In each of the following lines write down the word (on the dotted line) which is most often suggested by the word in capital letters.

PUNCH	and	.
PETER	and	.
HANSEL	and	
ROMEO	and	
JACK	the	

Test II.—30 *minutes allowed.*

1. In each of the following lines underline the word in capitals which makes sense.

Grass is	RED, BLUE, GREEN, PINK, WHITE.
Paris is in	ENGLAND, RUSSIA, AMERICA, FRANCE, GERMANY
Lead is a	VEGETABLE, STONE, METAL, POKER, BRICK
Water satisfies our	HUNGER, MOUTH, STOMACH, THIRST, APPETITE
A King lives in a	HUT, PALACE, COTTAGE, HOTEL, CLUB.

2. In the following passage there is in each line a word which is italicised. These words are not the right words, but each one contains the right letters of the word that should be there to make sense. Find the right word for each, and write it in the margin at the right. See that the word you write is on the same line as the word to which it corresponds.

Write words here.

Many children have to *dire* to
school but *toms* of them walk.
Many of them are good *dustncts*
and good sportsmen *tub* John, I
am sorry to say, *solve* to idle in
class, gazing *no* his book but
seeing nothing on the *gape.* He
has very seldom *node* much work,
nor has he ever *now* a prize. I
am afraid he will *ton* be a great
success

3. (*a*) Underline *two* words which are related to each other in the same way as "eye" and "see"

song, ear, whistle, eyebrow, hear.

(*b*) Underline *two* words which are related to each other in the same way as "sweet" and "sour."

good, polite, conduct, bad, forward

(*c*) Underline *two* words which are related to each other in the same way as "apples" and "greengrocer"

oranges, draper, raisins, handkerchief, knife.

(*d*) Underline *two* words which are related to each other in the same way as "alive" and "living"

drive, hurry, walk, sail, haste.

(*e*) Underline *two* words which are related to each other in the same way as "lion" and "animal."

tiger, coal, mineral, flower, man.

(*f*) Underline *two* words which are related to each other in the same way as "foot" and "man."

shoe, cat, horse, woman, hoof.

(*g*) Underline *two* words which are related to each other in the same way as "hand" and "glove"

arm, leg, foot, knee, boot.

(*h*) Underline *two* words which are related to each other in the same way as "jacket" and "button."

room, floor, door, wall, lock

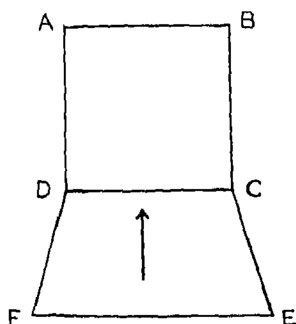
(*i*) Underline *two* words which are related to each other in the same way as "wheels" and "carriage."

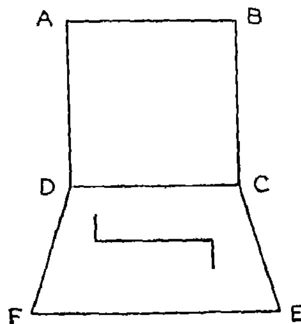
sledge, reindeer, motor-car, runners, driver

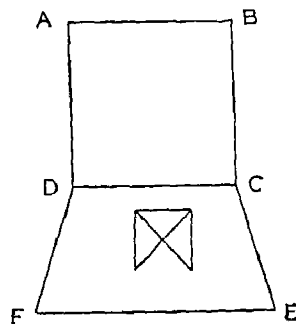
(*k*) Underline *two* words which are related to each other in the same way as "aeroplane" and "air."

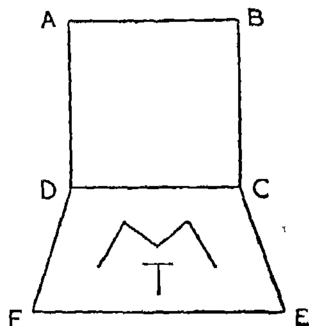
water, milk, gas, steamer, motor-car.

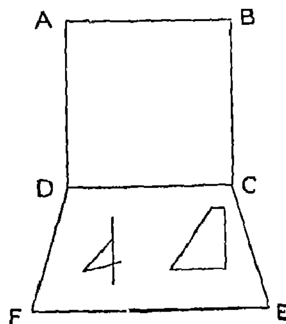
4. The five figures below each represent an upright mirror with a tray in front of it The figure ABCD is the mirror and DCEF is the tray. On each tray there is a drawing and you are required to draw each figure as it will appear in the mirror. Make each of your drawings inside the mirror.











5. In the following sentences the words are mixed up. You are to puzzle out what they mean and then do what they tell you

X ◯

(*a*) second place letter the circle the of alphabet the in
(*b*) ring cross round this a put
(*c*) England is the capital of what? ....
(*d*) the four after third what number is odd? ....
(*e*) name the the the this this of of at in county space sentence end write ....

6. Below there are five words You are required to use each one as the first of a list of five words, so that each successive word stands for something which contains what the previous word stands for. Here is an example in which the given word is "door."

door, room, house, street, city.

We start with "door," then write "room" which contains a "door," then "house" which contains a room, then "street" which contains a house, and lastly the fifth word "city" which contain a street. Now do these in the same way.

(*a*) *Inch.*
(*b*) *Second* (of time).
(*c*) *Finger-nail*
(*d*) *Leaf* (of a tree).
(*e*) *Word.*

7. There are 26 letters in the alphabet and a code may be made by writing the first 13 letters in a row and the second 13 letters in a row immediately below them, the 14th letter below the first letter, the 15th letter below the second letter and so on. Write down these two rows.

....

....

To write a word in the code, use for each letter the letter immediately above it or below it Using this code write the code-word for

SCOTLAND

....

8. The following words are to be arranged alphabetically by writing the numbers 1, 2, 3 and so on, on the dotted lines in front of each word. (You may read again the instructions for Test I, question 2.)

....	cellar	....	cat
....	cab	....	count
....	court	....	cedar
....	cinder	....	cuff
....	curb	....	cigar

Group Test—Set III.

Test I.—*Time allowed*—5 *minutes.*

1. Passengers on the platform of a certain railway station can see the letters

S R

painted on the window of the waiting room

Write these letters on the line below as they appear to people inside the waiting room.

....

2. Draw a small square on the dotted line in front of the word which means a part of a building. Cross out the word which has "i" in the middle, and draw a circle round the word which means the opposite of "Thick."

. . . .	Road.	. . . .	Even.
. . .	Fairy.	.. .	Rich.
. .	Thin.	.. . . . .	..Roof

3. Here are four large numbers Write "E" on the dotted line in front of the number which begins with an even figure and "M" in front of the largest number

. .	7628359.	. . . .	9876253.
.	9238657.	.. . . .	8267539

4. Look carefully at this row of numbers. Try to find out how it is made up and write the next number on the dotted line.

12. 10. 8. 6. .. .

5. There are three words printed at the end of the following line. Underline the one which makes the best sense when you read the whole line.

In winter the nights are hot. / green. / cold.

Test II.—*Time allowed*—30 *minutes.*

1. People walking past a certain shop can see these words painted on the window

Sunlight Soap

In the space below write these letters as they will appear to people inside the shop. The first two letters are already done for you.

qɒ

2. Draw a small square on the dotted line in front of each word which is the name of a metal.

Make a cross in front of each word which means a part of your body.

Write "G" in front of each word which has more than six letters

Write "NO" in front of each of the words which are left which end in "y"

. .	Carry	. . . ..	To-morrow	. . .	Brass
.	William	. .	Yes	. .	Sixteen
.	Tin	. . . . .	Finger		Half
	Foot	.	Difficulty	.	Sheep
	Here	. .	Gold		No
.	Right	.	Tongue	. .	Boy

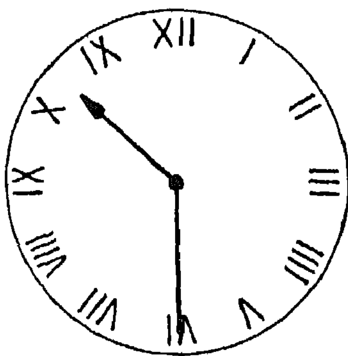
3. Write after each word the word which has the opposite meaning

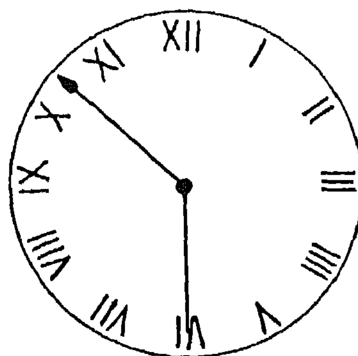
Cheap . . .	Absent
Rough . .	Crooked .
Difficult	Subtract . . .
Enemy	Thrifty . .
Tight	Recede . .
Stale . .	Deep . . .

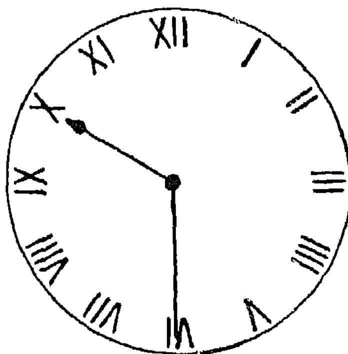
4. Here is a group of large numbers. Write "L" on the dotted line in front of the largest, "S" in front of the smallest and "Q" in front of the one which has four even figures in it. Draw a line under the one which begins with 4 and ends with 5 and put a cross in front of the number in the first column which comes again in the second column.

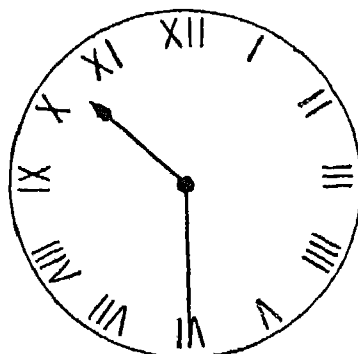
. . 7549326	. . . 4276359
. . 4712965	. 4295736
. . 7563492	. 6574291
. . 4276359	. 7592614
. 5794326	. . 5267814
. . . . 7592634	. . . 4276351

5. Here are four sketches of a clock face showing half-past ten. There is one mistake in each sketch. Make a cross on each part that is wrong.









6. *Read very carefully the four following paragraphs, one at a time, and then put your answer to the question on the dotted line*

(*a*) A boy was told to go into a farmyard and to bring out the smallest animal which he saw which was alive and not shut up In the farmyard he found a horse, a cow, and a kitten which was playing with a dead mouse on the top of a hutch containing a live rabbit. Which did he bring?

. . . .

(*b*) There is a certain country where the weather is always cold and dry. In another it is dry but always warm. In another it is very wet and cold A friend of mine, who lives in one of these countries, always wears an overcoat but never carries an umbrella. In which country does he live—the first, the second or the third?

. . . .

(*c*) Long ago there lived a very famous magician. One day a man came to him and said, "I am very ill. How can I get better?" He replied, "Go back home but stop at the first apple tree which you find on the road Yesterday I put five things at the foot of that tree. Another thing came there during the night while everyone was asleep. Touch that thing and you will get well, but if you touch any of the others, you will die."
Under the tree the man found a loaf of bread, a sword, an ear of wheat, a drinking glass, an apple and a glove. He touched the right one and went away cured Which did he touch?

. . . .

(*d*) A policeman was once called to a hotel and was told, "You are to follow the waiter who is going into the breakfast-room In the room you will find a man with blue eyes and brown hair. Arrest him."
So the policeman followed the waiter. There were only two guests in the room. One was a man with brown eyes and brown hair, the other a man with blue eyes and grey hair Whom did the policeman arrest?

. . . .

7. Wherever you see three words printed one above the other draw a line under the one which makes the best sense The first one is done for you.

Horses drink (up / never / readily) but they will not eat (hay / shavings / grass)

Some of these (stars / questions / people) are very (curved / cheap / easy)

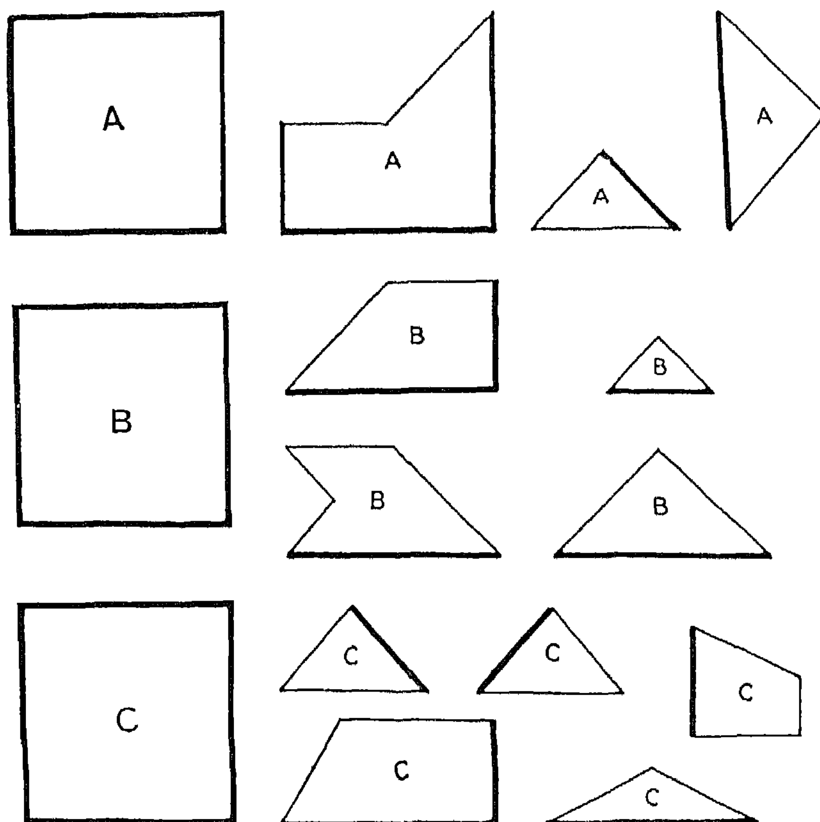
(Five / Seven / Four) sheep at (two / seven / six) pounds each would cost (eighty / eight / eighteen) pounds

The name of my (sister's / brother's / aunt's) wife is (Elsie / John / Fred)

It is (sometimes / never / hardly) wet on (to-morrow / yesterday / Thursdays) but not (every / always / twice)

8. The squares marked A, B, C, below can be cut into the pieces which are marked with the same letter Mark with your pen or pencil where the cuts in the square must be made in order to obtain the same shaped pieces. The thick lines show that these sides of the pieces form part of the outside of the square.

NO MARKS MUST BE MADE ON THE PAPER EXCEPT IN THE SQUARES



9. Below are some rows of numbers. Try to find out how each row is made up and then put the next number on the dotted line.

3	7	11	15	19	.
64	32	16	8	4	.
1	4	9	16	25	
$2\frac{1}{3}$	$3\frac{1}{5}$	$4\frac{1}{7}$	$5\frac{1}{9}$	$6\frac{1}{11}$	. . . .
22	17	13	10	8	. .

BUCKS COUNTY EDUCATION COMMITTEE

(Entrance Scholarships Examination)

Intelligence Test

1. In the first line below, the fourth word is related to the third word in the same way as the second is related to the first. On the same plan, write a fourth word for each of the other lines.

hand,	glove,	foot,	shoe.
toe,	foot,	finger,	
boy,	girl,	son,	
lamb,	bleats,	horse,	
he,	him,	she,	
iron,	solid,	water,	
joy,	sorrow,	plentiful,	

2. (*a*) What time of the day is as much earlier than 8.30 a m as 12 50 p m. is later than 11.15 a m ? Answer (*a*)

(*b*) If a cyclist starts from A, rides 2 miles east, then 6 miles west, next 5 miles east, and lastly 4 miles west, how far is he then from A? Answer (*b*)

(*c*) In what direction must the cyclist named in (*b*) next ride to get back to A? Answer (*c*)

3. Harry is younger than either Tom or Bob Bob is older than either Frank or Tom. Frank is younger than Tom and older than Harry. Fill the blanks in the following sentences with the one word that makes them true.—

Frank is not than Harry.
Tom is not so as Frank.
is the youngest of the four

4. (*a*) Who was the mother of the son of Queen Matilda?
(*b*) What relation to Mr. Brown is the daughter of Mr Brown's brother's wife?
(*c*) What relation to you is the only son of your father's father?

Answers to No **4.**—
(*a*) (*b*) (*c*)

5. In the row of letters below, draw a short line over the top of every M that is between two small letters unless the small letter on the right of the M is a vowel, also cross out every small letter that is neither a vowel nor next to a vowel.

w M a b o M r s M t e h a M e r f d M i g k M p c o M a M t

ESSEX EDUCATION COMMITTEE

(County Junior (Free Place) Scholarships Examination)

General Paper.

B1. What is absurd or amusing in the following?—

(*a*) An Irishman was drilling a squad of men but could not get them to form a straight line At last he cried out: "Bah! Your line is as crooked as a corkscrew. All of you fall out and have a look at it"

(*b*) Mother. "Why are you crying, Mary?"
Mary: "John has broken my doll."
Mother· "How did he do that?"
Mary: "With his head when I hit him with the doll."

(*c*) Tom is very *ingenious, he has made a cork model of a diving*-bell that will not sink. (T. Hood.)

(*d*) Remember when you are bathing, if you meet a shark, the best way is to bite off his legs, if you can, before he walks off with yours (T. Hood.)

(e) Lewis Carroll once wrote to a little girl:—
"My dear Gertrude,
"This really will not do, you know, sending one more kiss every time by post; the letter gets so heavy it is quite expensive."

B2. Write in a *column* the following names of countries and opposite each write the name of the people who live there:—
Arabia, China, Denmark, Greece, Holland, Italy, Norway, Portugal, Switzerland, Turkey.

B3. Say what you know about any *five* of the following.—
David Copperfield, the Pilgrim Fathers, Robinson Crusoe, Scrooge, Horatius, Minnehaha, Puck, Hercules, St. Paul, Long John Silver

B4. The following words are used to express small quantities:—
speck, crumb, drop, breath, grain, flake, ray, pinch, chip, sip
Which word would you use with each of the following substances to express a small quantity of it:—
wood, ink, bread, snow, dirt, sand, water, air, light, salt?
Put this second group in a column, and in front of each put the most suitable word from the first group.

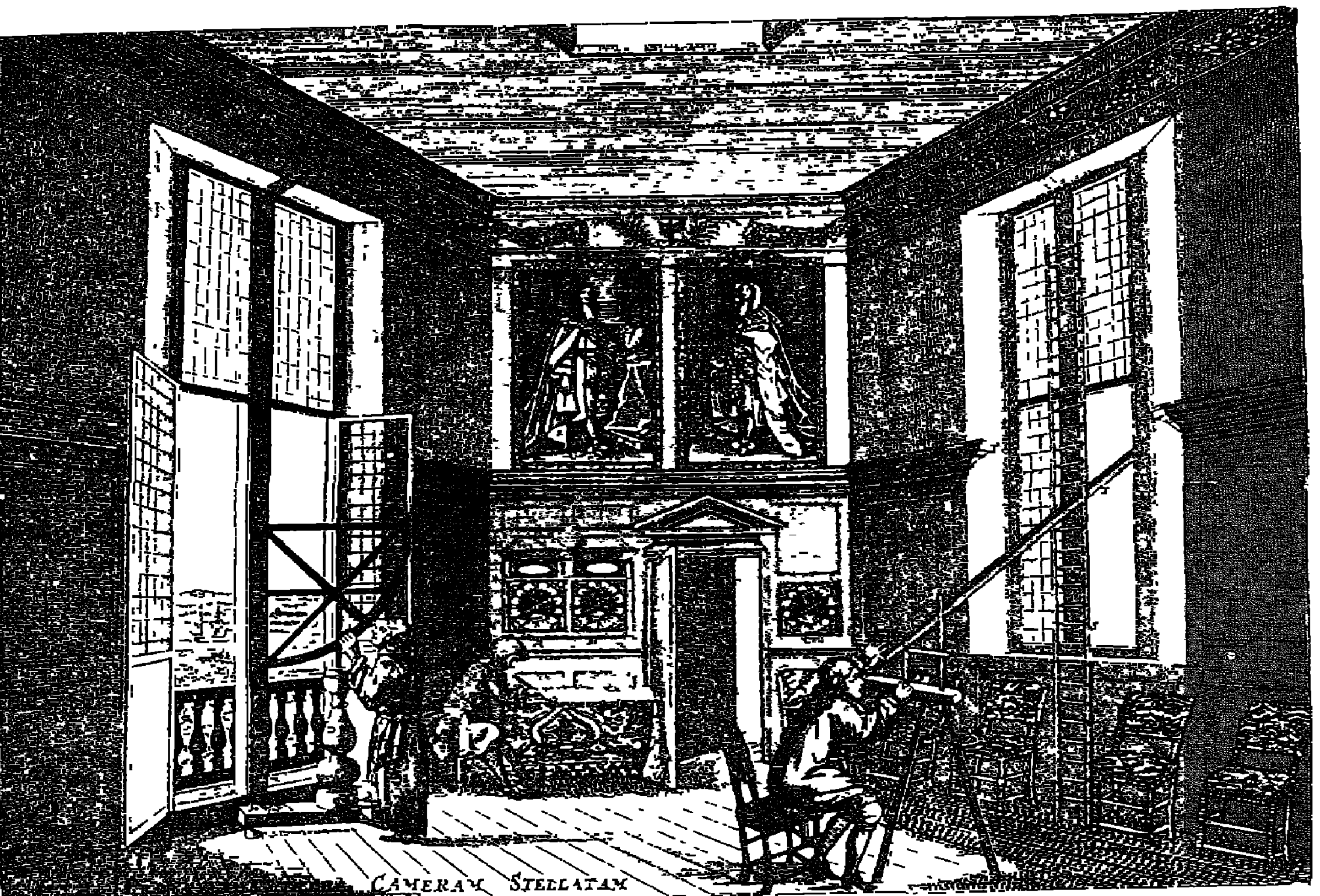
Small quantity.	*Substance*
	wood.
	ink.
	bread
	snow.
	dirt.
	sand.
	water.
	air
	light.
	salt.

B5. Below are six sentences in a foreign tongue, and opposite each is the English translation. If you examine 1 and 2, you will notice only one word repeated twice in English and also one in the foreign tongue. You can consider that these two words are equal, *i e*, mean the same. Now examine the rest of the sentences, and put the following English words in a column, and opposite them the foreign words that mean the same:—
tea, is, this, ready, very, good
Note.—The words in English may not be in the same order as in the foreign tongue.

1. Ek piyala chae.	A cup of tea.
2. Yih chae bahut achchhi hai.	This is very good tea.
3. Taiyar hai yih chae.	This tea is ready.
4. Kab taiyar karege?	When shall you make ready?
5. Main bahut pyasa hun.	I am very thirsty.
6. Bahut achchhi hai.	It is very good.

This
Tea
Is
Ready
Very
Good

SCIENCE TEACHING IN THE PRIMARY SCHOOL



The Old Observing-Room, Greenwich

SCIENCE TEACHING

INTRODUCTION

THESE are the days of specialisation, in schools as well as in workshops In science it is no longer possible for a research student to take the whole realm of Nature as his province, and teachers hesitate to give instruction outside the limits of physics, chemistry or plant and animal life in which they have had some practical training It is not surprising, therefore, that science in schools is often regarded as almost a vocational study, useful for scholarships or for industrial life, but not as an essential part of the education for all. This, however, is the aspect of science teaching with which the present article is concerned, whether it relates to the primary school, secondary school or university, and it is one which receives least consideration from both examining authorities and teachers.

It is worth while, perhaps, to trace the course of events relating to the attempts which have been made from time to time to give some attention to the teaching of science in primary schools The terms of reference of the Newcastle Commission appointed in 1858 acknowledged the need "for the extension of sound and cheap elementary instruction to all classes of the people" Robert Lowe's Revised Code of 1862 emphasised soundness by restricting the curriculum to the three "r's"—reading, writing and arithmetic—and cheapness by the system it established of "payment by results" With all its defects, this Code led to a greater systemisation of elementary education, and revealed the nakedness of the land The great Education Act of 1870 was not specially concerned with the content of education, other than religious teaching, but the Code of 1871 provided a special grant for individual scholars who passed in two "specific" subjects, in addition to the three "r's," these specific subjects being geography, grammar, algebra, geometry, natural philosophy, physical geography, the natural sciences, political economy, languages.

Thus the cause of science teaching in primary schools received its first official recognition. What were the influences at work to produce this important result? Dr D M Turner, in her interesting *History of Science Teaching in England* selects the names of Herbert Spencer and Huxley for special commendation. Herbert Spencer published his chief work on education in 1861 Addressing himself to the question "What knowledge is most worth?" he pleaded for the discipline of science as superior to that of ordinary education because of the *religious* culture which it gives, religious because the student gains a faith in unchanging relations "in the invariable connection of cause and effect, and in the necessity of good or evil results" Huxley approached the same question from a somewhat different point of view, emphasising "the different outlook resulting from a knowledge of science." The utility of science was common ground even with the advocates of the "grand old fortifying classical curriculum" Huxley, whose philosophy of education was more human than Spencer's, sought to show the beauty of science. "The sunny side of his philosophy was revealed in his plea that children should be led to love Nature and follow her ways in joyous pursuit." Nature herself was the great educator

Whether the early policy of the Education Department in introducing science teaching into primary schools produced results of value must remain an open question The blight of "payment by results" permeated the whole system Under the influence of

Huxley, the London School Board appointed at an early stage a committee to inquire into the curricula of schools. For the younger children, the approach to the more serious teaching represented by the examinations of the Science and Art Department was through a graded course of "object lessons" providing a six years' course of elementary instruction in physical science The number of London children who acquired a fairly substantial knowledge of certain science subjects under this system was considerable. The Final Report of the London School Board states that in 1881 animal physiology was taken at the examination of the Science and Art Department by six thousand, nine hundred and one children, four hundred and eleven took botany and sixty-one mechanics In 1884, a system of peripatetic teachers of mechanics was instituted by the London School Board, a system copied by other School Boards. "Elementary Science" was prescribed as a "class" subject by the Education Department in 1882. Some years later—1895—the Code made "object lessons" compulsory in the lower standards, and this led to an increase in the number of children taking elementary science as a "class" subject in the upper standards.

The teaching of science in primary schools suffered—and probably still suffers—from the defective training of teachers In 1904 the subject was made compulsory in training colleges and it was laid down that every college should have a suitably equipped laboratory; but at the present time science is not a compulsory subject in the training college course.

It may indeed be said with truth that there has been a decline of science teaching in primary schools during the past twenty years or so. There is now no particular inducement to teachers to qualify to teach science, so that the tendency seems to be to neglect the subject in training college courses and afterwards. Even when instruction is given in scientific subjects it is often far too academic and uninspiring to serve a right purpose in a scheme of science for all. The teaching of measurements of lengths, areas, volumes, densities and principles of mechanics, for example, should be included in the course of arithmetic or mathematics and not in the science course

School instruction in science is not intended to prepare for vocations, but to equip pupils for life as it is and as it soon may be It is as essential for intelligent general reading as it is for everyday practical needs; no education can be complete or liberal without some knowledge of its aims, methods, and results, and no pupil in primary or secondary schools should be deprived of the stimulating lessons it affords. In such schools, however, the science to be taught should be science for all, and not for embryonic engineers, chemists, or even biologists, it should be science as part of a general education—unspecialised, therefore, and without reference to prospective occupation or profession, or direct connection with possible university courses to follow Less than five per cent of the pupils from our State-aided secondary schools proceed to universities, yet most of the science courses in these schools are based upon syllabuses of the type of university entrance examinations—syllabuses of sections of physics or chemistry, botany, zoology, and so forth—suitable enough as preliminary studies of a professional type to be extended later, but in no sense representing in scope or substance what should be placed before young and receptive minds as the scientific portion of their general education. The needs of the many are sacrificed to the interests of the few, with the result that much of the instruction is inept and futile, whether judged by standards of enlightenment or of stimulus. Exceptional pupils may profit by it, but to others, and particularly to teachers of literary subjects in the school curriculum, it often appears trivial or sordidly practical, and is usually spiritless—a means by which a man may gain the whole world, but will lose his soul in the process.

Practically all the subjects of a broad course of general science are of geographical significance, inasmuch as they are concerned with the earth as man's dwelling-place, and the scene of his activities. Rightly conceived, geography can be made the earliest means of education, as both Comenius and Locke regarded it; and it can be used as the unifying principle of all the generalised scientific instruction in schools. It provides interesting subjects for laboratory exercises and field work, and the results of observation and experiment are seen to be of use in understanding what is going on in the earth as the result of both natural and human agencies. A school course which would cover all the science required for the study of geography conceived as a branch of knowledge concerned with the natural environment of man and the inter-relations between him and those circumstances would not only be educational in the broadest sense, but would also be the best groundwork for effective teaching of geography, history, and other humanistic studies. It would make science a natural part of a vertebrate educational course instead of specialised and exclusive as it tends to be at present.

The prime claim of science to a place in the school curriculum is based upon the intellectual value of the subject matter and its application to life. This conception of education through science as the best preparation for complete living was Herbert Spencer's contribution to educational theory; and to its influence the introduction of science into the school is largely due Spencer's doctrine was in accord with the principles of Pestalozzi as to the sequence in which facts and ideas should be presented and be related to stages of development, in order to be effective in creating or fostering natural interests in the mind of the child. Scientific instruction implies, therefore, not alone knowledge that is best for use in life, but knowledge adapted to the normal course of mental development. Both substance and method should be judged by the criterion of what is of greatest immediate worth, or nearest to the pupil's interests at the moment. If this standard of psychological suitability is applied to the school science courses now usually followed, it must be confessed that they rarely satisfy the test, many topics and much material being remote from the pupil's natural interests and needs.

The purpose of descriptive instruction in science is, of course, altogether different from that of practical experiment in the laboratory. One of the functions is to provide pupils with a knowledge of the nature of everyday phenomena and applications of science, and of the meaning of scientific words in common use. Instead of aiming at creating appreciation of scientific method by an intensive study of a narrow field, a wide range of subjects should be presented in order to give extensive views which cannot possibly be obtained through experimental work alone. The object is, indeed, almost as much literary as scientific, and the early lessons necessary for its attainment ought to be within the capacity of every qualified teacher. Without acquaintance with the common vocabulary of natural science, a large and increasing body of current literature is unintelligible, and there are classical scientific works which are just as worthy of study in both style and substance as many of the English texts prescribed for use in schools. We all now accept the view that science students should be taught to express themselves in good English, but little is heard of the equal necessity for students of the English language to possess even an elementary knowledge of the ideas and terminology of everyday science, which are vital elements in the modern world, and which it is the business of literature to present and interpret.

It may be urged that no knowledge has any scientific reality unless it is derived from first-hand experience, and this is no doubt right in one sense; yet it is well to remember that science, like art, is long, while school life is short, and that though practical familiarity with scientific things must be

limited, much pleasure and profit can be derived from becoming acquainted with what others have seen or thought It is true that we learn from personal experience, but a wise man learns also from the experience of others, and one purpose of a descriptive science course should be to cultivate this capacity of understanding what others have described. As in art, or in music, or in literature, the intention of school teaching should be mainly to promote appreciation of what is best in them rather than to train artists, musicians or men of letters, so in science the most appropriate instruction for a class as an entity must be that which expands the vision and creates a spirit of reverence for Nature and the power of man, and not that which aims solely at training scientific investigators.

We want science not only to be a means of stimulating real and careful thinking through doing things, but also a means of creating interest and enlarging the working vocabulary of the pupils and thus truly increasing their range of intelligence So may scientific instruction be made a power and an inspiration by giving, in the words of the Book of Wisdom (vii. 16-20).

"an unerring knowledge of the things that are,
To know the constitution of the world and the operation of the elements,
The beginning and end and middle of times,
The alternations of the solstices and the changes of seasons,
The circuits of years and the positions of stars;
The nature of living creatures and the raging of wild beasts,
The violences of wind and the thoughts of men,
The diversities of plants and the virtues of roots."

When school science has this outlook it will lie closer to the human heart than it does at present, and a common bond of sympathy will be formed between all who are guiding the growth of young minds for both beauty and strength. The difficulty, of course, is to put into practice the educational principles here expressed—to design a course of science instruction which will combine interest in things and phenomena of everyday life with thought about them. It must be left to practical teachers themselves to construct such courses, for they alone know the limit of consciousness of their pupils or what equipment is available for practical work or individual observation. All that can be offered, therefore, in an article of this kind is general guidance as to the nature and scope of subjects which may appropriately be included in elementary science teaching.

In the earliest stages, interest and observation are probably best encouraged among the rank and file through Nature study in its widest sense, that is, not only living creatures and plants but also the beauties and wonders of the earth and sky, the daily course of the sun, the succession of the seasons, phases of the moon, and the shapes of some of the star groups observable at different times of the year. Little attempt should be made at this stage to explain the causes of structures or occurrences. Young people are more interested in actual things or events than in reasons for them, and it should be remembered that what seems a remarkable truth to a mature mind may make no appeal to a child. All children who are not colour blind can see the order of the colours in a rainbow, can be shown how the size of the arc depends upon the time of day or altitude of the sun, and that the sun is always behind them when they see a rainbow, but any effort to explain the formation of a rainbow by rain-drops upon sunlight is obviously premature as well as unnecessary. The first and supreme thing to do is to impress the pupils with a love of Nature, for this is the saving grace of all education and is the soul of art as well as of science.

In the junior school or up to the age of about eleven years, whatever science teaching

is attempted could be of the Nature knowledge character. It has unfortunately been assumed that the next stage in science teaching must be of the nature of laboratory exercises, such as measurements of lengths, areas, volumes and so on To make all the science work quantitative at this early stage is, however, a mistake. A logical order of the treatment of a subject is not necessarily a psychological or natural order. It involves topics of different degrees of difficulty and is not adapted to the mental life or development of the pupil. The beginnings of practical work should, therefore, be mainly through qualitative exercises or the examination of simple properties of things. When a boy is shown a toy or any device he first asks "What is it?" then "What does it do?" and only later can be made interested in the Why or the Wherefore.

Work in physics may, therefore, suitably begin with simple experiments with magnets and compass needles, electro-magnets, the electric bell, the needle telegraph, telephone, electric torches, lighting, heating, and wireless. The properties upon which all these everyday applications of science depend can be illustrated with things which can be bought for a few shillings. In heat, cheap thermometers can be used to make pupils familiar with degrees of temperature and with simple effects of different radiating surfaces, convection, conduction, boiling points, shade temperature, and so on. Shaving mirrors, motor mirrors, magnifying glasses, or spectacle lenses, toy telescopes, use of plane mirrors in a periscope and similar common things, will illustrate optical properties. Stretched wires or a simple monochord, together with tuning forks, toy whistles, and sirens provide the means for many experiments on vibrations and sound, resonance and other subjects.

In chemistry also, the early work should be of a playbook of science type and not a systematic approach to the subject Give a boy a bunsen burner, evaporating dishes, tripod, and a few bits of apparatus of this kind, together with a toy cabinet of chemical experiments, and he will acquire both interest and knowledge which he will want to understand later Many suitable topics for elementary science teaching are suggested by the syllabuses of subjects for the various badges given to Boy Scouts and Girl Guides. It is an advantage, therefore, to bring such topics into the practical course whenever opportunity is afforded.

The prime aim of all this early work should be to stimulate interest and establish contact between the school and the things of everyday life The world to the child of to-day is that of the steam engine and locomotive, motor cycles and cars, electric dynamos and currents, telegraphs and telephones, gramophones and wireless sets, moving pictures and sound films, turbines, aeroplanes and hundreds of other appliances created by science and invention. How keenly interested young people are in these things is manifested by the crowds of school children to be seen almost every day in the galleries of the Science Museum at South Kensington It should be possible to make science work in schools appeal just as strongly to their interests and thus to transform a task into a pleasure. If this is done in the early stages of the teaching, the best foundation will have been laid for the systematic course which will be taken by pupils who have the requirements of School Certificate examinations as their proximate or ultimate end In schools, however, where most of the pupils leave at fifteen or sixteen years of age, the syllabus upon which the science course is based should be one of everyday or general science and not of the usual specialised type, such as physics or chemistry. Studies of this kind are appropriate enough for pupils who intend to proceed to universities or other places of higher learning, but what the rank and file need is a comprehensive course intended to awaken interests which will continue when schooldays are over.

Associated with whatever science instruction is given—whether descriptive or prac-

tical—should be the reading of good books on the lives and achievements of pioneers of science. In such books information should be made subordinate to inspiration, and broad outlines of great discoveries or inventions should be presented instead of tedious detail There are plenty of themes for epics of this kind, and when the reading of books recording them in good style forms part of every school course, much will have been done to break down the barrier often supposed to exist between literary subjects and science.

RICHARD GREGORY.

SYLLABUS AND SUGGESTIONS FOR A THREE YEARS' COURSE

IN drawing up a course of elementary science for beginners, sufficient regard must be paid to those things which arouse interest and stimulate enquiry. Where possible, simple toys and household objects should be used to illustrate scientific facts, and with each object the subject is best approached in a manner which may correspond to the probable train of thought in the child's mind. On being shown an object, a pupil may first wonder what it is, then what it does, and finally how does it do it?

Though it may not always be possible, lessons should generally be arranged to answer these questions. Simple apparatus is quite easily and economically obtained, and in many cases, the scholars themselves may furnish examples

With most subjects it is advisable to avoid any but the most elementary theory, facts and applications being the chief consideration with young children. Since one cannot proceed very far in chemistry without theoretical consideration, the syllabus includes subjects mainly of a physical nature, such chemistry as does form part of the course being reserved for the third year. The actual division of each year's course into separate lessons is left to the discretion of the teacher, who is the best judge of the matter since he knows the amount of time allotted to the subject in the course of the school year. Periodically, lessons should be devoted to revision, and some time may be profitably employed in allowing the pupils to make rough sketches of *simple* objects shown to them in illustration of lessons.

FIRST YEAR'S COURSE FOR PUPILS NINE YEARS OF AGE

It is important that the pupils' introduction to science should be of such a nature as to awaken a lively interest in the subject at the start. Many teachers have come across former pupils who candidly admit that they have never liked "science" because their introduction to it was "dry" and uninteresting. First impressions may not always be the best, but they certainly have a lasting effect upon the subsequent likes and dislikes of a student.

For this reason, the properties of a simple bar *magnet* may well be taken as the subject of the first lesson. A bar magnet is more suitable than one of the horseshoe pattern, though the latter will also be useful

Proceeding along the lines—what is it? what does it do? and how does it do it? observe that it is a bar of *steel* (not iron), it attracts and lifts other small pieces of steel and iron, and it does this by a kind of pulling force or attraction that operates across an apparently empty space. Show that the attraction is exerted through pieces of paper, cardboard, and thin glass, but not through

the iron lid of a cocoa "tin." Demonstrate that larger magnets will generally lift more iron filings or "tin" tacks than small magnets, and mention cases in which the pulling force of a magnet is of use in daily life—extraction of iron or steel splinters embedded in the flesh, the lifting and carrying of scrap iron in engineering works, etc.

Explain the origin of the word magnet from Magnesia, in Asia Minor, where natural magnetic rocks occur. Show how to convert a knitting needle or pocket knife into a magnet by stroking it several times in the same direction with *one* end of the bar magnet. Magnetise other steel objects in the same way and test their lifting powers by means of tacks, nails, etc.

At least two or three lessons should be given on this subject. In these subsequent lessons the facts stated below should be demonstrated :—

The two ends or poles of a magnet pick up an equal weight of tacks, but there is a difference between them, and they are marked differently, one N. the other S.

A magnet floated on wood in water or suspended by a silk thread swings round so that one end, marked N, points to the North, the other to the South. A *compass* used for direction finding is a bar magnet. Sailors, airmen, surveyors, and explorers all use compasses.

Further interest in the subject should be stimulated by games with magnetic toys, e g guiding model fish in a basin of water, and by iron filing patterns obtained by *thinly* sprinkling iron filings on a sheet of white paper having a magnet (or magnets) beneath it. Tap the paper gently to assist the filings to settle in position.

The fact that magnetism acts across apparently empty spaces forms a good introduction to a lesson on *Frictional Electricity* which may also attract objects across empty spaces.

This is a subject in which, at this stage, theory should be carefully avoided. It may be pointed out that something termed electricity is generated on certain substances such as sealing wax, vulcanite, and glass when these materials are rubbed with flannel or silk. All materials must be quite dry, since moisture permits electricity to escape. Little pieces of paper, chopped straw, etc., are attracted by the electrified sealing wax, vulcanite (fountain pen) or glass rod. (Compare magnet and iron filings.) The effect of electrified sealing wax on a straight piece of straw balanced on a cricket ball should be noted. Mention should be made of amber, from which we obtain the word electricity, and sulphur, both used by the ancients (600 B.C) for generating frictional electricity *Lightning* consists of enormous quantities of this electricity collected in the clouds and causing huge sparks which are very dangerous if they strike a building or tree. Emphasise places of safety during thunderstorms—inside a house, a hollow in the ground, and places *away* from trees and tall posts.

Another pulling force which attracts *all* objects across apparently empty spaces is called *Gravitation*, and is a subject that may reasonably supply material for several lessons. The classic tale of *Newton* and the apple is generally considered to be based on fact, and may form a convenient starting point. A little should be said about Newton himself Apples fall, so do children if they jump. The earth pulls things towards its centre, if it were not for this pulling force objects, including ourselves, would be shot into space by the earth's rotation. The *weight* of anything is the amount of pull exerted between the earth and the thing Take a spring balance, explain that it is a coiled spring used for weighing objects. The heavier the object, the greater the earth's pull, and the more the spring opens out. Next consider an ordinary pair of *scales* as used in a grocer's shop, and explain how it works by gravitation. Toy scales do well for this purpose. Avoid mention of any weighing machines such as a steelyard, or even a seesaw, since these introduce the question of *leverage*, a subject far too complicated for young pupils

Other ways in which the force of gravity

is useful in daily life may easily form material for other lessons. Falling weights work *lifts* in some places (Cliff railway at Lynton for example), and in other cases heavy weights balance a lift so that a little power from a motor moves it up or down. A complete teaching period might be devoted to a study of a *grandfather clock* which is operated by falling weights, and regulated by a long pendulum, a part also worked by gravitation. A weight swinging at the end of an adjustable length of string can be used to show that a long pendulum swings slowly, a short pendulum swings quickly. The tale of how *Galileo* discovered the law concerning a swinging pendulum by watching a lamp swinging in church may be of interest. The time taken by each complete swing of the pendulum of a grandfather clock should be observed (Standard seconds pendulum.) All clocks are not kept working by falling weights, many are operated by the uncoiling of a spring, which must be wound up periodically.

Elasticity could well form the subject of a lesson. With young pupils it might easily be defined as "the tendency to spring back to the same shape or position as before" Thus, a coiled spring tries to uncoil, and in doing so can work a clock, or drive a *toy engine* or train A *marble*, glass or otherwise, strikes the floor, becomes flattened just for a moment, and then springs back and consequently jumps. A piece of "elastic" stretches and then springs back, supplying power that can work a *model aeroplane*. The air in a *tennis ball* well illustrates elasticity—the ball bounces. Actual specimens of marbles, tennis balls, clockwork engines, etc, should be used for demonstration purposes.

Now a pendulum will not continue to swing indefinitely, clockwork trains must be wound up at times, and machinery of any kind must be continually receiving new energy to keep it going. Several people have tried to devise a perpetual motion machine, but they have all failed. The obstacle to perpetual motion is *friction*. It would be well to give this subject two or three lessons, as it plays such an enormous part in daily life. First explain what friction is, and illustrate by simple examples, such as a heavy book, stationary on a gently sloping desk. Why does it take several scholars to move a classroom desk? Emphasise the *value* of friction in walking, stopping a train, carving a piece of wood and many other examples. Then deal with friction as a nuisance as in machinery and all mechanisms which require continued application of energy to keep them going. How friction may be lessened by *lubrication*, and by the use of *wheels*, as shown by a toy locomotive or cycle. A book remains stationary on a sloping desk, but a tennis ball rolls off Roller skates and skates used on ice should be described as means of reducing friction. Friction causes heat as used by early man to light a fire, and is useful to-day for striking *matches*. It may be stimulating to arrange the scholars into two groups, and promote a competition to see which group can name the greatest number of examples of friction (*a*) as a nuisance and (*b*) an advantage.

Liquids such as water, and gases like air also rub against things. Ships have to be forced through water, and a pendulum is slowed down partly by air resistance. But *air resistance* is a very useful thing, hence we have *sailing boats*, *windmills* and *aeroplanes*. The air pushing against the wings of an aeroplane forces it up so that it does not fall, and the rotating propeller hits the air so that the machine is pulled forwards. The movable tail of an aeroplane uses air resistance as a means of steering.

Kite flying may be made a subject of interest. Atmospheric pressure, as it affects a *pump*, could be dealt with very simply if a glass pump is available As the pupils *see* the plunger rise they can realise that there would be an empty space if the water also did not rise. The outside air pushes the water upwards. Compare the suction of lemonade through a straw. The working of a barometer is probably too difficult for

pupils of this age The principle of the *balloon* might be illustrated by the use of a toy rubber balloon containing coal gas Things lighter than air rise through it just as pieces of wood rise through water.

SECOND YEAR'S COURSE FOR PUPILS TEN YEARS OF AGE

The simple and more easily explained facts concerning heat and sound afford much interesting material for a series of lessons extending over the second year. Household objects and various toys again serve as means of practical demonstration, and a reasonable amount of the pupils' time may be devoted to making sketches of the more simple objects.

With young pupils, theoretical considerations concerning the actual nature of heat should be avoided, elementary facts and principles being the main objects of study.

The importance of *heat in daily life* might be taken as the subject for the earlier lessons.

We all know the sensations called hot and cold Our bodies contain heat and if we lose some of it we feel cold, and if we get too much we feel hot. A metal object such as a door knob feels cold because it quickly takes heat away from our hands, but a duster does not feel cold because it does not take much heat away from our hands. Permit the scholars to enumerate objects that feel cold and those that do not produce that sensation. Warm things, such as hot water, make us feel hot because extra heat is given to us The influence of *clothing*, including flannels and straw hats in summer, should be described

The tendency of our bodies, and of most other things, including the earth itself, to lose heat, makes a continuous supply of heat necessary for the continuation of things as they are. The *sun* sends us heat across an apparently empty space measuring some 93,000,000 miles.

At this stage, seasonal changes should be accepted as a fact without any discussion of causes, but the influence of spring and autumn on trees, flowers, insects, etc, should be noted In order to warm our rooms in winter we use coal fires, though in buildings such as schools it is not the cheapest and best way to have a coal fire in each room. For this purpose a *hot water apparatus* consisting of a furnace, a boiler, some iron pipes and "radiators," is used. Give a diagram of the apparatus and explain that the particles of water are heated in the boiler and then travel along the pipes, taking their heat with them. Burning fuel is also the usual source of energy which enables us to obtain warmth from electric heaters.

Heat does work for us.—Some lessons may be devoted to the expansion of heated objects, particularly metals The fact that a piece of metal is slightly larger when it is hot than when it is cold can be shown by heating a metal ball which just passes through a wire ring or loop when it is cold. Most things behave in this way, even a gas such as air. Describe a hot air balloon, i e one that is caused to ascend by means of a burning object placed near the open end.

An ordinary *thermometer* is a case illustrating useful expansion of a liquid It is used to measure the degree of hotness, or temperature, of things, including our own bodies. Compare the size of the bulb with that of the stem of the thermometer, and explain the equal divisions or degrees The pupils should learn the temperature of—the air in the room, boiling water, ice, and the human body.

Heat melts solids such as ice, sealing wax, lard, etc , and pressure melts ice, as can be shown by the suspension of a heavy weight from a wire passing over a block of ice. *Snowballs* can be made because the snow melts under the pressure of the hands but freezes again when the pressure is released. When possible examine *snow crystals* with a magnifying glass Heat makes a liquid become a gas, steam for example Hot steam in a closed boiler exerts great pressure

so that it can work an engine A toy *steam engine*, properly fitted with a safety valve, should be used to illustrate one or more lessons on the steam engine. A motor boat is also useful. Steam from a boiler passes along a pipe to the steam chest. A sliding mechanism or "slide valve" regulates the entry of steam into the cylinder, first to one end of the piston so that it is pushed forwards, then to the other end of the piston so that it is pushed backwards. These movements operate the driving wheel which can be connected to other machinery by means of a belt. In a locomotive the rotating wheel causes the machine to move. The operation of the slide valve by the eccentric is rather a difficult point, and should be avoided unless a good model is available. A little about the history of steam engines would be of interest. *Hot air engines* may also be employed to show that heat does work, but the explanation of these is not easy, and is best not attempted with young children.

Water becomes steam without being boiled; it *evaporates* slowly when left exposed to air. Such water vapour goes into the air and is invisible. When the air is cooled such water comes back again, first in the form of *clouds*, then as drops of rain. The chief kinds of clouds could be described simply—great white rolling clouds common in summer (cumulus), and light feathery clouds about six miles above the ground (cirrus). Types and associated weather rather than names should be remembered.

In the study of *sound* it may be well to commence with the consideration of what happens when we hear a noise, such as that due to the banging of a desk. The events are—the desk shakes, the air shakes, and little bones in our ears shake causing us to hear All three of these occurrences are necessary. Take away any one of them, the air for example, and no noise is heard. Imagine a silent world without air. But sounds do not always travel through air This fact can be illustrated by means of a *string telephone*. Two cocoa tins each having a hole bored in its base are connected by a long piece of string the ends of which are passed through the holes and knotted. When the string is taut, a child at one end can hear another speaking into the tin at the other end. Sound travels along the string, but as a rule the air is the medium conducting the sound Next, show the difference between a noise, and a musical note, a *tuning fork* being used in illustration of the latter. The tuning fork shakes or vibrates a definite number of times per second. The movement is quicker with high-pitched or treble notes than with bass notes. (Middle C vibrates 256 times per second.)

The origin of music must be traced to attempts of primitive man to express his feelings by means of sounds, and the earliest types of concerted music were probably in the nature of war cries and folk songs. Then it was discovered that pleasant sounds or notes could be produced by beating objects and by blowing air through pipes. String instruments came later. The piano, as we now know it, was invented about the year 1700, when violins reached a very high standard of perfection (Stradivari and Guarneri of Cremona)

A toy *drum* and a *triangle* may be used as examples of percussion instruments Focus the child's attention upon the events—the drum vibrates, the air vibrates, the ear vibrates.

The principle of "stringed" instruments can be demonstrated by means of a wire stretched between two ridges of wood on top of a cigar box. The wire should be fastened to a nail at one end but allowed to hang over and support a heavy weight at the other end. Vary the weights and observe the effect on the notes produced. With this instrument we have,—the wire vibrates, the air vibrates, the ear vibrates.

The chief lesson to be learned from a *violin* is the fact that the notes produced depend upon the lengths of vibrating string as determined by the position of the finger. What other instruments are similar to a violin? Can the strings be made to vibrate

by any other means than a bow? What is the effect of tightening the strings?

In a *toy piano* little strips of metal take the place of strings, and they are made to vibrate by means of hammers Observe the various lengths of the metal strips. In a real piano steel wires are used, and these are of different lengths. Which wires produce the treble and which the bass notes? How is the piano tuned? Encourage the pupils to answer such questions themselves

An ordinary *tin whistle* affords a good illustration of the fact that a column of air inside a pipe can be made to vibrate and act as if it were a string. Air blown through the mouthpiece hits against a thin edge at an aperture in the side of the tube, and by this means the air *in* the tube is thrown into vibration. In the side of the whistle are six holes, and different notes are obtained by placing fingers over the holes, because an open hole determines the length of the vibrating air column. With this instrument we have—the air inside the pipe vibrates, the air outside the pipe vibrates, the ear vibrates

In a church *organ* the pipes do not have holes, but each note is produced by a particular pipe of a certain length. The blast of air is produced by machinery as a rule.

A *mouth organ* works in a different way. In this case the various notes are produced by little strips of metal, called *reeds*, thrown into vibration by the breath The clarinet, oboe, and bassoon are examples of reed instruments

In all schools where the length of the playground exceeds one hundred feet, a lesson on *echoes* should be given The air vibrations proceed to the school building and are sent back or reflected, but a certain interval of time must elapse in order that the echo may be clearly distinguished from the original sound.

The *gramophone* is particularly interesting in being an apparatus for producing *second-hand* music or speech The chief part of a gramophone is the sound box which contains a circular mica disc to which is attached the needle that touches the "record" when the machine is working. When a record of a song is made, the singer sings in front of the sound box and causes the mica disc to vibrate This movement makes the needle scratch wavy lines on a wax plate, which thus receives an impression made by the singer's voice. Now if the needle is allowed to go over these marks on the wax again, the mica disc in the sound box will vibrate in exactly the same way as it did before, and will make the same sounds as the singer did Copies of the wax disc are sold as "records."

THIRD YEAR'S COURSE FOR PUPILS ELEVEN YEARS OF AGE

Elementary facts concerning light and simple chemistry form convenient subjects for the third year, but on no account should any geometrical optics be included in the course on light, nor chemical symbols be introduced in the lessons on chemistry

The course on light might commence with a consideration of the chief sources of light The sun is a mass of burning gases, hot enough to send light across spaces measured in hundreds of millions of miles. Stars are also made of white hot gases, but are so far off they do not give us much light. Moonlight is merely reflected sunlight, the moon being cool. Nearly all things which give light are very hot—sun, candle flames, lamps, etc., but a few animals, such as the beetle called "glowworm," and one or two minerals give light though they are cool. Light from cool objects is called *phosphorescence*. Bad fish glows in the dark on account of phosphorus in it.

We must have light in order to see things. Objects such as tables, desks, books, etc., are not hot, and have no light of their own, but we see them because they send light borrowed from the sun (or lamp) to our eyes. Things to be seen, *must send light to our eyes*.

Air is invisible because it does not do this Books in a glass case are seen because light is sent by the books *through* the glass and it reaches our eyes. Glass and water are transparent.

Information concerning the fact that light travels in straight lines may be obtained from *shadow games*. Arrange a lamp and screen and place various objects in between them. Shadows occur where dark spaces are formed, due to the obstruction of light by the objects It is hardly advisable to discuss umbra and penumbra, as the proper explanation of this would involve geometrical optics

What information with regard to the shape of an object does its shadow give? Hold a plate (*a*) broadside to the light, and (*b*) edgewise to the light. Insert a ball between the light and screen. The shadow of the ball is *always* a circle When the earth gets in between the sun and the moon there is a lunar eclipse, and the shadow cast by the earth is always a circle or part of a circle. The earth has the shape of a ball. On a sunny day the shadow cast by a pole or tree points directly to the north at noon, winter time, and 1 p.m. summer time. The pupils might construct rough *sundials*.

Because light travels in straight lines we cannot see round a corner unless we use a *mirror* placed across the corner. A mirror alters the direction of the light. Light that strikes it is sent off again because the surface of the mirror is *perfectly* smooth Enumerate things that can act as mirrors—bright metal, glass, polished furniture, undisturbed water, etc. We see pictures or *images* of things when we look into a mirror, because the mirror reflects light so well. With a plane or flat mirror these facts should be emphasised. —The image of an object appears to be the same size as the object, and appears to be as far behind the mirror as the object is in front of it. But the right side of a boy appears as the *left* side of the image in the mirror This lateral inversion enables one to read writing on blotting paper held in front of a mirror. Multiple images of an object between two flat parallel mirrors can be explained by repeated reflection of light between the two mirrors The arrangement of two flat mirrors to form a simple *periscope* should be of interest. Curved mirrors can be demonstrated by means of a large bright *table spoon* The outside or convex surface produces a small picture of most of the room, whereas the inner surface or concave side gives a magnified image of a lighted taper held quite close to it. Motorists use a convex mirror, a man shaving often uses a concave mirror. Which type of mirror does a dentist use?

Images or pictures of objects can be obtained by other means. A small cardboard box, preferably square, has a pin hole punctured in one side, and on the opposite side a piece of strong tissue paper is placed in place of the cardboard Images of candle flames, window lights, etc , can be seen on the paper screen if a cloth is put over the head. In an ordinary camera a little glass lens is used in place of the pin hole, and better results are obtained. Note that in cameras and in the eye the images are smaller than the object and are upside down. At least one complete lesson should be devoted to the *eye* itself, a simple diagram showing the lens, iris, and nervous screen or retina, being used. The optic nerve takes the impressions to the brain, and the cornea protects the front portion of the eye. People wear spectacles because the eye gets out of shape, with the result that the lens is unsuitable Such persons wear spectacles or lenses to help the lens of the eye to produce a clear image at the back of the eye. Some people require convex glasses, others concave glasses. (Without geometrical optics it is rather difficult to explain short and long sight.)

The use of a convex lens as a *magnifying glass* can be explained simply by saying that light coming from the object passes through the lens, and in doing so becomes spread out so that the object appears larger than it really is. Distant objects appear small because they are a long way off In a *toy telescope* there are two lenses, the eye

piece near the eye, and the object glass at the other end. The object glass forms a *small* image of the distant object, and the eye piece magnifies this image, when the two lenses are properly adjusted or "focused" by means of the sliding tube A *microscope* works in a similar manner, but the object glass gives a magnified image which is again magnified by the eye piece.

The subject of *colour* forms an interesting conclusion to an elementary study of light Newton found that ordinary sunlight in passing through a triangular glass prism is split up into *seven primary colours*. Bevelled glass, and rain drops act in the same way, hence a rainbow Each drop of water splits up the light that enters it, but we see a rainbow only when the shower of rain is in front of us, and the sun behind us. The combination of the seven colours to form "white" light can be shown by means of *Newton's top*. In this a circle of white cardboard is divided into seven equal sectors, and each sector is tinted with one of the seven colours. A short piece of pencil pushed through the centre of the circle completes the top, and on spinning the colours combine to produce a dirty white colour.

Coloured fabrics and other objects reflect only the light coloured as we see them. Thus a red carpet reflects only red light, and so on Red glass permits only red light to pass through.

The part of the year's work which deals with chemistry should deal, as far as possible, with common processes taking place almost daily The changes which take place in a *coal fire* might be a convenient subject to take first. The impressions of fern leaves and other plants found in coal, and the origin of coal should form the subject of one lesson Most coal consists of black *carbon* and is somewhat similar to charcoal The chemical changes taking place in a fire are mainly—the *oxygen*, part of the air, joins (combines) with the carbon in coal forming gases which go up the chimney. The ashy residue left in the grate consists of unburnable mineral matter in the coal. Similarly, when paper, wood and many other objects burn, they combine with atmospheric oxygen forming gases which are invisible and escape into the atmosphere. A certain amount of ash is left behind.

Another lesson of a similar nature could be devoted to changes which happen when a *candle burns*. Wax contains not only carbon but other things, including *hydrogen*, a gas used for balloons. Hence the burning candle forms water vapour as well as gases containing carbon. Oxygen of the air combines with hydrogen to produce water vapour. Without expensive apparatus, it can be pointed out that when electricity is passed through water the water splits up into hydrogen and oxygen, the two substances of which water is composed Both of these are invisible gases, hydrogen being inflammable, while oxygen is not inflammable

Slow combustion, illustrated by the *rusting of iron*, affords material for a most instructive lesson. Some iron filings should be sprinkled on the moistened bottom of a tall glass cylinder or jam jar. The jar is then inverted and placed with its mouth in a wide dish of water. In the course of a day or two the filings will have rusted (oxidised) and the water will have ascended one-fifth of the way up the jar. Conclusions · one-fifth of the air is oxygen used up slowly in forming rust. Dry iron does not rust, hence water is necessary. Also oxygen is necessary. Iron filings placed in a tightly corked bottle containing water from which all dissolved oxygen has been removed by boiling does not rust The residual gas in the jar is *nitrogen* not used in the process of rusting (or of ordinary combustion) Nitrogen is a very important substance, however, since we need it in some form as food—lean meat, cheese, fish, etc. Neither plants nor animals can live without nitrogen, and plants get it from mineral salts in the soil.

Further lessons may be given on the *properties of water*, particularly its action as a *solvent*. Water, though it appears continuous, is really full of little spaces or

pores, and into these spaces dissolved substances, such as sugar and salt, go

Prepare a salt solution and boil to dryness in a dish The salt is left. Prepare solutions of copper sulphate, and alum, place in saucers, and allow them to evaporate slowly. Note the *crystals* produced. Most crystals contain water. Washing soda loses water and becomes an opaque white solid. Some substances crystallise without water. Thus sulphur melted down and left to cool crystallises in long needles.

The *effects of heat* on certain common substances should be known. Wood shavings heated in a glass tube give off vapours and leave a black residue called charcoal. (Compare coal) Sugar so heated gives off water vapour and also leaves charcoal, though it turns brown first. Powdered limestone heated strongly and for some time in a crucible leaves a white powder called *lime*, while a gas containing carbon (carbon dioxide) escapes into the air. Enumerate the uses of lime—mortar, cement, agriculture, etc. If the gas carbon dioxide were caught and dissolved in water, aerated water would be the result. Quantities of this gas are also employed for putting out a fire. Show that carbon dioxide is present in exhaled breath by passing such breath through a solution of lime in water Particles of white limestone are formed because the gas again combines with the lime.

The simple course on chemistry given above is designed for schools where apparatus is not available. Where suitable apparatus is available the following additions could be made:—

Distillation of water.

Electrolysis of water.

Preparation of oxygen and experiments illustrating its properties

Preparation of hydrogen with experiments.

Preparation and experiments with carbon dioxide.

L. M. PARSONS

LESSONS FOR THE FIRST YEAR'S COURSE OF SCIENCE

A BAR MAGNET

PROCEEDING along the lines—what is it? what does it do? and how does it do it? notice that it is a bar of steel which has the power of attracting other pieces of steel and iron.

Experiments

1. Hold one end of the bar magnet over a few "tin" tacks or small nails lying on a bench. It will be seen that the "tin" tacks move towards the magnet, become attached to it and can be lifted from the bench by the magnet. Thus the attraction takes place across apparently empty space

2 Try if the magnet will attract other things, e g. pieces of paper, feathers, sawdust, scraps of copper, a "tin" lid, iron filings, a clock spring, etc. Make two lists, one containing the substances attracted and the other those not attracted. The children will soon find that iron and steel objects, the "tin" lid and "tin" tacks, are attracted, but the others are not affected by the magnet The teacher can show them that the "tin" lid is iron, coated with tin. This can be done by scraping off a little of the tin coating. It can then be proved that it is the iron which is attracted by demonstrating that a piece of pure tin is unaffected by the magnet.

3. Hold a piece of paper between some iron filings or nails and a magnet, and it will be seen that the power acts through the paper. Repeat this simple experiment

using wood, glass, cloth, cardboard, etc, and show that the power of attraction passes through each one. Finally, show that nothing made of iron or steel is attracted if a sheet of iron or steel or a "tin" lid is held in front of the magnet.

4. If magnets of various sizes are available the children will soon find that a large magnet will usually pick up more "tin" tacks than a small magnet. Some of the class may know of ways in which this lifting power is used in iron and steel works for moving heavy loads. The teacher might also tell of the use of a magnet in extracting splinters of iron or steel which have entered a workman's eye or become embedded in the flesh

The origin of the word magnet should be explained to the children. Many centuries ago a kind of stone was discovered in Asia Minor which had the power of attracting to itself small pieces of iron. This fact, though interesting, was not of great use at that time, but much later a second remarkable property was discovered which made the stone of value to men If suspended by a thread so that it could swing freely it was seen to point always in the same direction, one end pointing north and the other south This property made the stone valuable as a guide for men in their journeys across land and sea. It soon became very useful in a world in which the sun and stars were the only other guides, guides whose light might fail in stormy weather, thus the name *lodestone* or leading stone was given to it The word *magnet* came from Magnesia, in Asia Minor, where this remarkable rock was found in large quantities. Explain that even so the lodestone was rare, and magnets would not have been used as widely as they are to-day if its third property had not been discovered, namely, that the power of the lodestone can be passed on to pieces of steel and its own power still remain as strong as ever Therefore artificial magnets were made, such as the bar magnet used in the experiments described here, and the horseshoe magnet. Small examples of the latter are possessed by many school boys and girls. These artificial magnets are more convenient than the lodestone and any number can be obtained.

Further Experiments

1. Dip a bar magnet into iron filings and notice that great numbers cling to each end of the magnet and stand out like the bristles of a brush The number of filings diminishes towards the centre, showing that the magnetic power is strongest at the ends, which are called the poles. Notice, also, that the two poles pick up an equal quantity of filings.

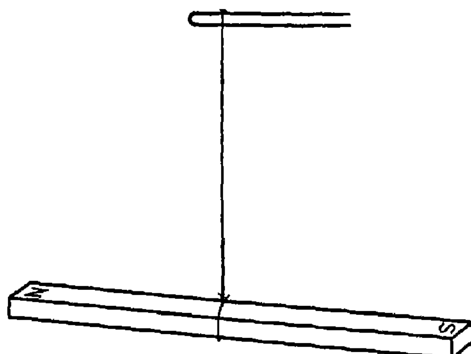


Fig. 1. Bar Magnet Suspended to Swing Freely

2. Tie a piece of silk thread round the centre of a bar magnet and suspend it so that it can swing freely, or float it on water on a piece of cork It will be seen that the magnet comes to rest in a definite direction, and that this direction is the same however many times the experiment is performed and for any bar magnet (see Fig. 1). If this direction is compared with the direction of the shadow of a stick as thrown by the sun at midday, it will be found to be approximately the same, i e the magnet points north-south. One end of the magnet is usually marked with a letter N, and often the other with a letter S.

3 A knitting needle, or piece of clock spring, can be made into a magnet very quickly by stroking it several times in the *same* direction with one end of a bar magnet

(see Fig. 2). Children will be interested to *make* a magnet and test it by picking up nails, suspending it to obtain the north-south direction, etc.

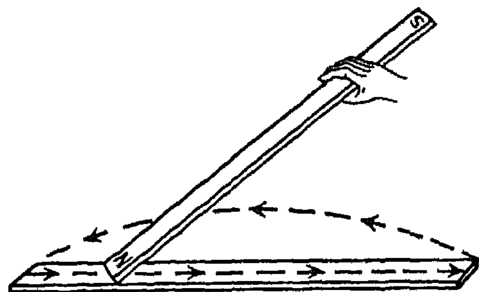


FIG 2 MAKING A MAGNET FROM A PIECE OF STEEL

4. A simple experiment can be performed to show the difference between the poles of a magnet Suspend a magnetised needle and bring the N pole of a magnet near to each end in turn. Notice that in one case the pole of the needle is attracted to the magnet, and in the other it moves away from the magnet. When the other pole of the magnet is used the effect is reversed.

If the experiment is repeated, using two suspended bar magnets or magnetic needles, it will be seen that both magnets move when the attraction or repulsion takes place. Ask the children to observe which poles are attracted to each other and which repelled. They will notice that a north-pointing pole attracts a south-pointing pole, but is repelled by a second north-pointing pole. This can be expressed as follows:

Like poles repel each other
Unlike poles attract each other.

5. Children will delight in making *magnetic chains* as follows: Pick up a nail by attaching it to one end of a bar magnet. Then bring the free end of the nail near to a second nail. The latter will be attracted and attach itself to the first nail In this way a chain of nails can be made all attached to and supported by the magnet (see Fig 3).

If the nail nearest to the magnet is removed the other nails immediately fall away from one another. It should be possible to explain simply what happens. When the first nail has been picked up, it can act as a magnet so long as it is attached to the magnet, hence a second nail can be picked up, which behaves similarly. The power is lost when the magnet is removed.

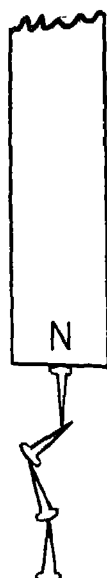


FIG. 3. A MAGNETIC CHAIN OF "TIN" TACKS

The fact that magnets may lose their power, and the way this is guarded against, should be explained by showing how to keep bar magnets when they are not being used. Show that they are kept in pairs, with the poles pointing in opposite directions and a piece of wood placed between them Explain that the keepers made of soft iron, which are placed across the ends, prevent much of the magnetic strength being lost.

Boys will be anxious to know how their horseshoe magnets compare with the bar magnet. Explain that since it is bent, the two poles of a horseshoe magnet are brought near together, and the power of both of them is available for picking up nails, etc. They will soon see that this kind of magnet needs only one keeper (see Fig 4).

Children know that the needle of a *compass* points always in the same direction. Show them that the needle is a magnet by bringing the pole of a bar magnet near to it and observing that one end is attracted by the N pole of the magnet and the other is repelled. Show that the card under the compass needle has all the cardinal points

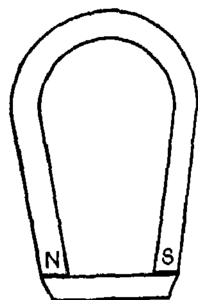


FIG 4 HORSESHOE MAGNET WITH KEEPER

marked on it, so that a compass can be used to find any directions besides North and South.

Interest in the subject can be continued by making patterns with iron filings and magnets This is achieved by arranging a bar magnet underneath a sheet of white paper on which iron filings are sprinkled The filings will settle into position if the paper is tapped gently The experiment may be repeated using two or more magnets, first end to end, then side by side, and finally using a horseshoe magnet. If photographic printing-out paper is used for this experiment a picture of the arrangement of the filings will be obtained. This can be "fixed" with hypo.

Some pupils of the class may possess magnetic toys which would be of interest to the class, e g. a game is sold which has model fish made of steel or "tin," which can be guided by fishing rods bearing small magnets.

FRICTIONAL ELECTRICITY

Frictional electricity may be compared with magnetism for it, too, attracts across apparently empty spaces.

Theory should be avoided, but interesting experiments can be performed to demonstrate this electrical power of attraction.

Experiments

1. Rub a fountain pen briskly with a piece of wool or fur for a few minutes and then hold it near to tiny scraps of paper, or cork or feathers. It will be seen that the fountain pen attracts the paper, etc , even when held a little distance away Tell the children that this attractive power is the result of something called *electricity*.

2 Repeat the experiment using rods of glass, sulphur and sealing wax. It will be found that each rod requires its own rubber. Encourage the children to find out and make

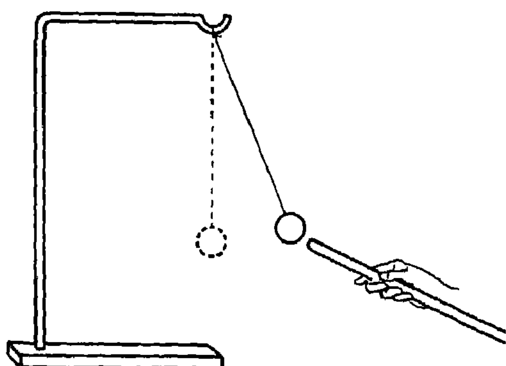


Fig. 5 Electrifying a Pith Ball

a list of the rods and rubbers required to electrify them. Notice that a sulphur rod is electrified when rubbed with wool, glass with silk, and sealing wax with fur The materials must be perfectly dry because moisture allows electricity to escape. Better results are obtained if the materials are warm. A pith ball suspended by a silk thread from a glass rod is even better than scraps of paper for demonstrating that a rod is electrified (see Fig. 5). A cat's fur stroked on a frosty day may produce sparks

3 Balance a straight piece of straw on a cricket ball, or an inverted round-bottomed flask. Bring an electrified rod near to one end and notice the attraction which takes place

4 Rub a brass or copper tube with each of the rubbers in turn and notice that it will not attract the pith ball.

5. Fix the metal tubes into perfectly dry glass tubes to act as handles and again rub. This time it will be seen that attraction occurs.

Explain simply that when the metal was held in the hand, the electricity escaped to earth through the hand and body of the person who held it, but that the glass handle prevents this from happening

Perhaps the children will wonder why the electricity did not escape when the glass rod, etc., was rubbed. Tell them that this would have happened if the electrified part had been touched, and that part of the glass

acted as a handle to prevent electricity escaping from the rubbed part. In a metal rod the electricity spreads through, or is conducted along, the whole rod. Thus a metal rod is called a conductor, but a glass one, which does not allow the electricity to escape, is called a non-conductor, or insulator.

It is about 2,000 years since it was first observed that when amber is rubbed with a piece of cloth it has the unusual power of attracting feathers, etc. What is amber? Thousands of years ago pine trees growing in various parts of the world, e.g Great Britain, America and more especially the Baltic countries, exuded a resin, which became covered with soil and remained under the ground for countless ages. There it hardened and changed until it became the hard yellow substance we know to-day It is fossilized resin Sulphur was used centuries ago with similar results, but the fact that other substances possess the same property was not discovered until Dr. Gilbert, of Colchester, one of Queen Elizabeth's physicians, made experiments. He discovered that glass, sulphur, resin, etc., have the same property as amber, and as time went on the list of substances having this property increased. Dr. Gilbert suggested that the word electricity, from *elektron*, the Greek for *amber*, should be given to this attractive power.

Explain that flashes of *lightning* are electrical. Sometimes electricity accumulates in clouds in enormous quantities, and the flashes are huge sparks caused by this electricity Perhaps some of the children may have seen electricity cause small sparks, e.g. when the ends of two wires joined to an electric battery are brought close together. This will occur only if the battery is strong enough Describe the danger which lightning may cause if the flashes strike trees or buildings. Emphasise that it is safer to avoid being near to trees and buildings during a thunderstorm The inside of a house or a hollow in the ground are places of safety.

When small electric sparks occur, e g the battery, a crackling noise is heard The thunder which follows a flash of lightning, corresponds to the crackle.

GRAVITATION

Another pulling force attracting all objects across apparently empty spaces is *gravitation*. Everything falls to the ground if not held in some way. A ball or coin dropped from a child's hand falls as far as it can, usually, to the ground. Tell children that, although this has always happened, people did not wonder why, but regarded it as unimportant. A famous scientist, Sir Isaac Newton, did wonder and ask himself why After many experiments he concluded that everything falls to the ground because the earth pulls it

Newton was born in 1642 at Woolsthorpe, in Lincolnshire. He was the son of a farmer, and was educated at Grantham School. He did not find Greek and Latin, which were important subjects at school, particularly interesting. He was always busy making mechanical toys, such as a windmill, a water-clock, a sundial, etc. One subject which he studied at school, namely, mathematics, he found especially interesting. Later, at Trinity College, Cambridge, Newton continued his mathematical studies, and graduated at that college in 1665. A few years later he became a professor of mathematics at Cambridge

One day, in the year 1665, so the story tells, Newton was walking in an orchard thinking about the power which keeps the moon swinging constantly round the earth. Suddenly he saw an apple fall to the ground and immediately began to wonder why it fell He realised that an apple has no power of self-movement and so thought that some power must have made it move. He pondered this deeply, made many experiments, and finally decided that the earth pulled the apple towards it. This pulling power Newton called *gravity*, a pull which attracts every-

thing to the centre of the earth. If gravity did not act in this way, everything, including people, would be shot off the earth into space by the force of the earth's rotation. Even if the earth did not rotate what would happen if a boy jumped and there was no force of gravity? Obviously there would be no force to pull him back again to the ground

As an introduction to experiments, ask the children if they have seen a shopkeeper use a spring balance (one which has one scale pan suspended from the balance by a hook) for weighing? Ask if they have ever thought what pulls down the spring of the balance when anything is put on to the scale pan? They will no doubt say that the weight of the article pulls down the spring.

Experiments

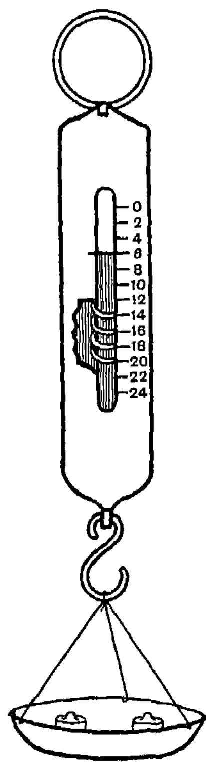


Fig 6
A Spring Balance

1 To illustrate weight Examine a small spring balance. Show that it contains a coiled spring which is stretched when a load is put on to the hook which hangs from the bottom of the spring Fasten a small tin lid to the hook of a spring balance This can be done by boring holes in the lid and passing string through the holes. Add weights to the scale pan so formed Notice that a scale on the front indicates the weight. Weigh a penny (if the balance is suitably graduated, if not, choose heavier articles) If possible weigh pieces of different metals, wood, glass, etc (see Fig 6). Ask why the weight pulls the spring out? Explain that it is due to the earth's pull, or the pull of gravity, and that the amount of pull depends on the weight of the body, i e. the heavier the object on the scale pan, the more the spring stretches

Teach children to use a balance carefully, and not to strain the spring by putting too heavy weights on the scale pan

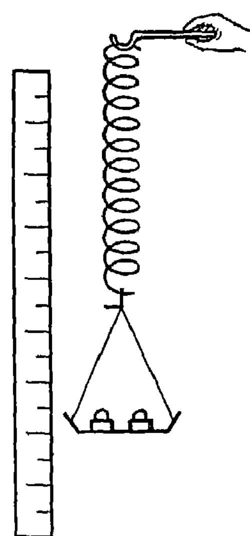


Fig 7
Graduating a Spring

2 To *graduate a spring* use a small copper or steel spring Fasten a small piece of tin at one end to act as an indicator and suspend the spring by the side of a ruler, which is arranged in a vertical position. Fasten a scale pan below the indicator. Read the position of the index, then add a weight and notice the amount of stretch Add other weights, each time noticing the amount the spring is stretched (see Fig 7). Make a table as follows.—

Weight used	*Position of Index.*	*Stretch per oz.*
0		
2 oz.		
4 oz.		
8 oz.		
12 oz		

A fine spring will be suitable for gramme weights, a stronger one for ounces, and a very powerful one for pounds.

If time is available, it would be possible to complete the making of a balance This could be done by making a tube of metal such as lead foil or tin and arranging the spring inside it The edges of the metal tube should not quite meet A piece of wire

put through the top of the spring and rested on the top of the metal tube would keep the spring in position. A strong short piece of wire attached to the bottom of the spring could be arranged to jut out through the slit where the metal edges meet. If the stretch per oz has been determined the scale can then be made on a piece of paper and stuck on to the metal tube. A piece of wire bent to form a hook and fastened to the bottom of the spring would carry a scale pan. Such a balance is not of a permanent nature, but its construction proves of great interest to young children.

Ask if any in the class have seen a grocer using scales consisting of two scale pans hanging from the ends of a horizontal beam? These are used less than automatic balances now, but may still be seen in some shops. Perhaps one or two of the children may possess toy scales of this type, and if so they would be useful for the next experiment.

3. Does the force of gravity act in the case of a *pair of scales*? Show how the grocer puts weights on one pan and adds sugar or tea to the other until the two balance. Explain that gravity pulls both *loads* and that the correct weight is shown when gravity pulls equally on both scale pans, i.e. when they balance (see Fig. 8).

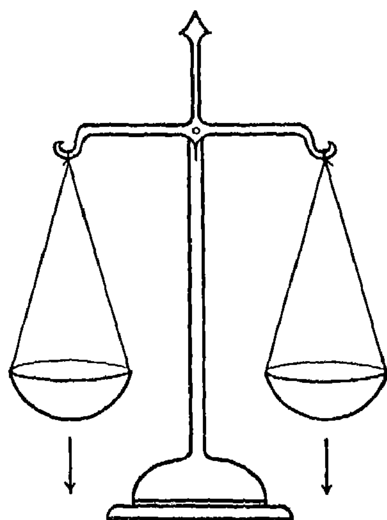


FIG 8 PAIR OF SCALES

Gravity is useful to a builder who uses a plumb line to ensure a wall being vertical. A *plumb line* has a ball of lead at one end When the other end of the line is held, the pull of gravity on the ball stretches the string making it taut so that the line is vertical.

To make a plumb line tie a piece of string on to a ball of lead or a rounded piece of iron. Cut a slit in a flat piece of wood making it as long as the line, and at one end cut a hole a little larger in diameter than the ball. Fix the string at the other end of the slit. Use this plumb line to test if the walls of the class-room, etc., are vertical The plumb line will fit exactly into the slit, and the ball into the hole, when the piece of wood is vertical (see Fig 9).

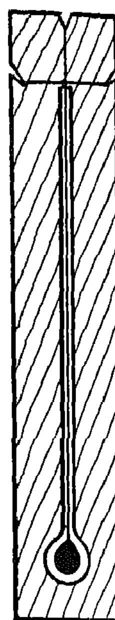


FIG 9

A PLUMB LINE

A *grandfather clock* forms an interesting subject for a lesson illustrating the force of gravity Apart from the hands and the dial, a weight and a pendulum are visible parts of the clock, and both work in response to gravity (see Fig. 10) Tell the children that the weight (W) provides the driving power of the clock, and the pendulum (P), as it swings, determines the rate of movement of the weight. The weight is attached to a long cord or chain which is wrapped round and round a drum (D). Gravity causes the weight to move downwards and so turn the drum and the various wheels connected to it. This downward movement of the weight would be very rapid if it was not for the fact that it is checked by the movements of a piece of metal called the anchor escapement (A) and a wheel known as the escape wheel (E) The escape wheel is one of the wheels moved by the turning of the drum. As it revolves the anchor rocks up and down,

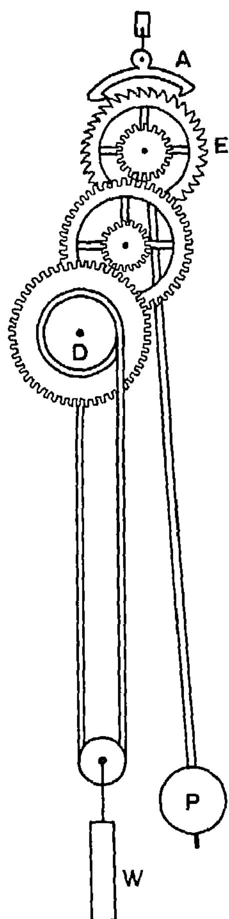


FIG 10 PARTS OF A GRANDFATHER CLOCK

W. WEIGHT
P PENDULUM
D DRUM
A. ANCHOR ESCAPEMENT
E ESCAPE WHEEL

worked by the swinging of the pendulum, and catching the teeth of the wheel. As the anchor rocks once, the escape wheel advances one tooth or cog, because as one point of the anchor lets go of a tooth, the other catches the wheel again as soon as it has moved forward one cog This constant catching and letting go causes the peculiar "tick-tock" of the clock, and keeps the pendulum swinging The escape wheel, we have stated, moves one cog with every movement of the anchor, so that it moves round at a definite rate. Other wheels varying in size are connected with the drum and the escape wheel. These wheels revolve at different rates because they vary in size and have different numbers of teeth. Therefore, they control the movements of the second, minute and hour hands which revolve round the dial and indicate the time

Falling weights sometimes work lifts, e g. the cliff railway at Lynton Often a heavy weight balances a lift so that a little power from a motor moves it up or down Sometimes in quarries gravity is used not only to send full trucks down hill but to pull up the empty ones. A double track is laid and the two trucks are connected by a cable which passes over a drum at the top

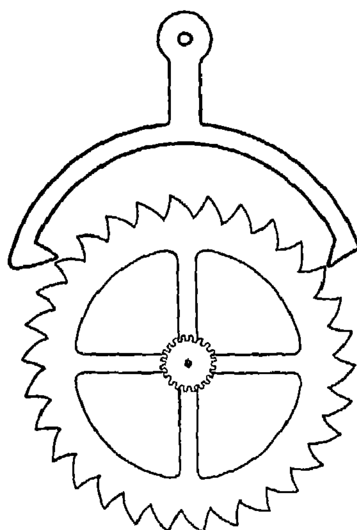


FIG 10A ANCHOR ESCAPEMENT OF A CLOCK

of the hill Then the weight of the full truck which is descending draws up the less heavy empty truck.

Several simple experiments can be performed to illustrate the chief facts of the law governing the swinging of a pendulum. State first of all that the swinging is due to gravity, and then proceed to make a *pendulum.*

Experiments

1 To make a pendulum tie a light strong thread on to a ball of lead or brass. Fasten the thread to a support so that the bob (ball) can swing freely (see Fig. 11). Explain that when at rest the bob is in its lowest position allowed by the length of the thread Start the swinging by pulling the bob sideways and releasing it. Gravity then pulls the bob downwards, but the thread will not let it move far. When it reaches the lowest point its power of movement allows it to move on to a position corresponding to the starting point. Thus the bob moves along a path which is an arc of a circle, and the movement is called one swing This swing will be repeated several times, but the dis-

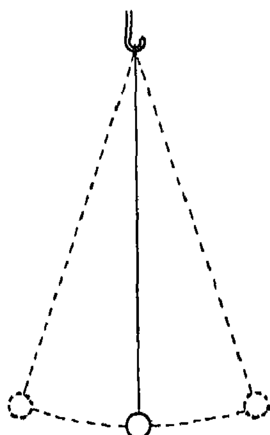


FIG 11 A PENDULUM

tance moved will gradually become less until finally the bob comes to rest.

2 Set up a pendulum with a thread about 12 inches long. Arrange a piece of cardboard behind the pendulum in a vertical position. The card should have a vertical pencil line ruled on it and be arranged so that the line is immediately behind the thread. Set the pendulum swinging and note the time when the thread passes the line When the thread again passes the line, count *one*, and continue counting until 50 or more swings are completed Again note the time. A stop watch is useful if accurate results are desired. Repeat the experiment several times but vary the length of the swing Make a table and work out the time taken for one swing.

	Time taken for 50 *swings*	*Time taken for* 1 *swing*
1. Very short swing		
2. Short swing		
3. Long swing		
4. Very long swing		

It will be found that except for exceptionally long swings the time for one swing is independent of the size of the swing

3. Repeat experiment 2 using pendulums of varying lengths, e.g 4 inches, 8 inches, 12 inches, 16 inches. Make a table of the results.

Length of pendulum	*Time taken for* 50 *swings*	*Time taken for* 1 *swing*
4 in.		
8 in.		
12 in.		
16 in.		

In this way prove that the longer the pendulum, the longer the time of the swing

N.B. If decimal fractions are too difficult, vulgar fractions will be found sufficiently accurate.

4. The fact proved in experiment 3 can also be proved in another way. Fix up two pendulums of the same length. Pull both sideways and release at the same instant. It will be found that they will return to the hands at the same instant. Then try with two pendulums of different lengths.

5. Notice the time taken for each complete swing of the pendulum of a grandfather clock. It will be found to complete a swing (to and fro) in one second A pendulum completing a swing in a second is called a *standard seconds pendulum*.

Using the knowledge that a long pendulum swings more slowly than a short one, a pendulum clock can be regulated if it gains or loses by lengthening the pendulum in the former, and shortening it in the latter case.

Galileo, an Italian scientist who lived in the sixteenth century, was the first to discover the law of the pendulum. Galileo was born at Pisa in 1564. His father intended him to study medicine but he preferred mathematics. He studied at the university of Pisa, where he became professor of mathematics when only 25 years of age. Galileo's attention was drawn to the law concerning the pendulum by noticing a large lamp swinging in the cathedral at Pisa during a service He noticed the vigorous swinging of the lamp just after

it had been lighted, and soon wondered if the time taken for each swing would alter as the swing became less He counted the time by counting his pulse beats, and found that the swing took the same number of pulse beats however short it became as the lamp came to rest. By further experiments he showed that the time of the swing depends on the length of the pendulum These experiments were the forerunners of his invention of pendulum clocks

ELASTICITY

All clocks are not worked by falling weights; some are worked by the uncoiling of a spring, which must be wound up periodically. The uncoiling of a spring is an example of *elasticity*, which could form the subject of an interesting lesson What is elasticity? Young children can be taught to think of it as "the tendency of some things to spring back to the same shape or position as before." Ask them what happens when they stretch a piece of elastic and let it go? They will realise that it springs back to the shape and size which it was before stretching.

Some pupils may possess a *toy aeroplane* which is fitted with a strong piece of elastic that works the aeroplane. The elastic is twisted very tightly so that it is stretched. As it untwists to regain its original size, it is made to turn the propeller, and so carry the aeroplane a considerable distance through the air.

A *catapult* used for throwing a toy glider into the air consists of a forked stick, to the prongs of which a piece of strong elastic is attached (see Fig 12). The elastic is stretched by the right hand which also holds the toy glider so that the elastic is behind it. The handle of the stick is held in the left hand. When the elastic is stretched and then released, it supplies power to send the glider through the air.

Substances other than rubber show the power of elasticity. Use a toy engine and show that when the engine is wound up the *steel spring* is wound up very tightly (see Fig. 13). Show that the spring is connected to the wheels of the engine. As the spring uncoils to try to regain its original shape, it does work by turning the wheels of the toy train, so that it runs along the ground until the spring has uncoiled By a very wonderful arrangement of wheels, a similar steel spring can be used to turn the wheels of a clock or watch.

It is easily seen that a piece of rubber is elastic, but who would think of glass in this respect? Use a *glass marble* and show how it bounces when dropped on to the ground. The children will demonstrate that the marble bounces and that the height to which it bounces depends on the force with which it strikes the ground. Explain that when

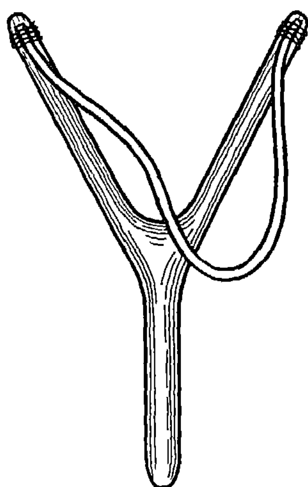


FIG 12 A CATAPULT

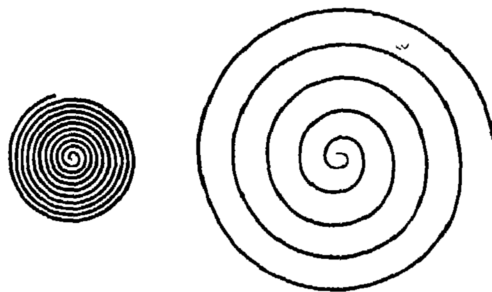


FIG. 13 A COILED AND AN UNCOILED SPRING

the marble strikes the floor it is flattened just for a moment and then springs back so that it "bounces." Use marbles made of materials other than glass and so discover that some materials are more elastic than others

A *ball of solid rubber* bounces for the same reason as the marble. The rubber is flattened slightly and springs back. Children will probably understand this bounce more easily than that of the glass marble because they can flatten rubber a little by pressing it. Then ask how a *tennis ball* is made? Explain that there is a "space" inside the rubber. This space could be shown by cutting open an old tennis ball Explain that this is filled with air, and that when the ball strikes the ground the air is squeezed into a smaller space because the ball is flattened. As the air regains its original size and the ball its original shape, the ball bounces

FRICTION

Introduce the next subject for lessons, *friction*, by asking what happens to the swinging of a pendulum eventually? Emphasise that however it is worked it will come to rest in time, unless it is given new power, which we call energy. The energy is given to a simple pendulum, such as the one used in experiments, by pulling it aside and releasing it. In a grandfather clock the falling weight supplies energy to the pendulum, whereas in many clocks the pendulum is worked by the uncoiling of a spring. The simple pendulum slows down fairly quickly. The grandfather clock must have its weight drawn up periodically by winding the chain attached to it round the drum when it has fallen as low as it can. A spring must be wound up at definite intervals. Ask the children how they manage to keep swinging on a child's swing? They will probably say they prefer to have a friendly push from the back after each swing, rather than try to keep swinging by their own efforts Machines need power to work them. A sewing machine used at home is worked by hand or foot, but children will probably have seen a sewing machine worked by electricity, even if only in shop windows. Explain that coal is burnt to make power which is converted into electricity. Other fuels such as oil and wood are used for the same purpose. Many people have tried to invent a machine which will go on working indefinitely once it is started and need no extra energy. No one has succeeded in making such a machine of perpetual motion, because of the obstacle which we call *friction*.

What is friction? It is rubbing. When two rough pieces of wood are rubbed against each other the unevennesses of the surfaces catch into one another, and make it difficult for the pieces of wood to slide over each other.

Experiments

1. Prove this property of friction by demonstrating to the class with rough pieces of wood. Repeat the experiment using two pieces which have been smoothed by planing and rubbing with glass paper It will be found that the planing and glass-papering have lessened the unevenness of the surfaces so that movement is easier, or in other words the friction (rubbing) is less.

Repeat the experiment, using two smooth pieces of metal such as steel or copper, and two pieces of glass. It is found that friction is less than in the case of the wood

2. Another simple experiment to demonstrate friction may be shown by resting a

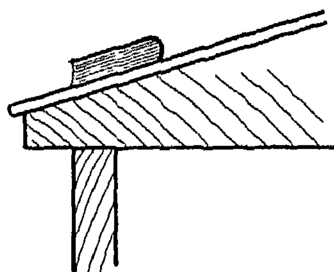


FIG 14 DEMONSTRATION OF FRICTION—A BOOK AT REST ON A SLOPING DESK TOP

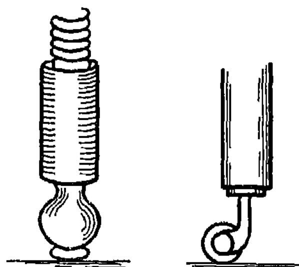


Fig 15 "Domes of Silence" and Castors on the Legs of Furniture Reduce Friction

heavy book on a gently sloping desk. Gravity pulls the book downwards but friction prevents the movement (see Fig 14).

Ask why it takes more than one pupil to move a large classroom desk? Undoubtedly the children will say that it is heavy Explain that this is not the only reason, but that its weight makes the desk press heavily on the floor, so that the roughnesses of desk and floor catch into each other firmly, making friction great so that hard pushing is necessary Small pieces of polished metal called "Domes of Silence" are often fixed to the legs of chairs and heavier pieces of furniture (see Fig 15). These make it easier to move the furniture and make movement quiet because they reduce friction. Castors fixed to furniture make movement easier in a similar manner These examples show that friction may be reduced by polishing and by wheels.

The advantages derived from friction — Friction is not always a nuisance, in fact it is quite often helpful A world without friction would indeed be a strange place Explain to the class that friction between the soles of our shoes and the ground makes walking possible. When the ground is covered with ice it is smooth, friction is reduced and walking becomes difficult. In a frictionless world we should find it impossible to walk; a rope, however rough, would be like a greasy pole, and we should find it impossible to hold anything in our hands

Friction is useful in stopping a train or tram, etc, because the brake stops a train by the rubbing of an iron shoe pressed against the wheel If friction did not exist the train once started would go on for ever. Starting a train or tram would be equally impossible, because in the absence of friction, the wheels would go round and round without advancing This sometimes happens in cold weather when there is ice on railway or tram lines, and sand is often thrown down to increase friction and so give the wheels a grip In the same way sand scattered on icy roads makes horses' hoofs grip and so helps the animals to keep their footing; it helps men to walk firmly on slippery roads too

A workman using sand or cement puts heaps of it near to where he is working Sand is composed of very small grains and could not be made into heaps if friction did not exist and help by making the rough edges of the grains catch into one another. In the same way friction is useful when a ladder is rested against a wall of a building. If friction did not exist the ladder would fall down.

Friction as a nuisance —Friction is a hindrance to movement and therefore a nuisance in all machinery. It causes a wasting of energy. Wheels are usually attached to an axle When they turn, the wheels will rub against the ends of the axle, and so some power will be wasted. Heavy loads are difficult to move over the ground because of friction between the load and the ground

Water moving through pipes rubs against the pipes. The larger the pipe the less the rubbing, so that apart from the size of the pipe, water passes more easily through a wide pipe than through a narrow one. When a key is difficult to turn in a lock the obstacle is friction A rusty key or lock causes a great amount of friction The same rule applies in the case of a rusty door hinge

Reduction of friction —Since friction causes a wastage of energy, much time and trouble are taken to reduce it as far as possible.

1. We have already discovered one way in which friction is reduced,—namely, by *polishing*. Highly polished floors are difficult to walk on, and so is ice "Domes of Silence" on furniture are an example of a reduction of friction by polishing, because they give the legs of furniture a smooth surface.

2 When a key turns hard in a lock, when hinges creak because they are rusty, and when a machine works stiffly, the *oil can is used*. The oil makes surfaces smoother than any polishing, because it fills up all the roughnesses and makes a film between the two surfaces, thus making them move over one another very smoothly. The use of oil not only saves power by making movement smooth, but it prevents the various surfaces of machinery from rubbing against one another and so getting worn away. The oil is useful in helping to prevent rust, as well as in the reduction of friction

Experiments

Rub together two pieces of glass. Smear a little grease or oil on the glass and rub together again. They will move much more easily when covered with oil If possible show the effect of oil on a rusty hinge or lock, etc.

3 *Wheels* are another means of reducing friction and thus making movement easier. Perhaps pupils will have seen workmen moving a heavy girder by placing rollers under it. The rollers move round, so that the girder does not rub against them as much as against a flat surface, and thus friction is reduced. Show this experimentally by examining a toy engine and compare its easy movement with that of a toy engine from which the wheels have been removed. Demonstrate the girder moved easily by rollers, by moving a pencil box or some heavier object on two pencils placed to act as rollers (see Fig. 16)

Show that whereas a heavy book is stationary on a gently sloping desk, a toy engine or a ball rolls off easily because the wheels, etc, reduce friction. Roller skates act in a



FIG 16 MOVING A PENCIL BOX ON TWO PENCILS TO REDUCE FRICTION

similar way, making movement more rapid when the owner has learnt to balance and move easily on them. Skating on ice is not due entirely to the smoothness of the ice, because it is not possible to skate on polished metal, which is as smooth as ice The skates press on the ice and cause a little of it to melt. The thin film of water acts in the same way as the oil in a machine, and so makes friction less.

Friction causes heat.—All children will know that after rubbing an indiarubber on paper for several seconds it feels hot if pressed against the face. Thus they learn that friction makes heat. Early man discovered that two pieces of dry stick rubbed vigorously together will eventually become hot enough to give a spark, which can be made to light dry moss and leaves. In this way the first fires were made, and the method is still used by primitive men in remote parts of the world. (See Class Picture No. 1 in the portfolio)

When men began to shape flints to form tools they found that sparks were formed. Later the *tinder box*, with its flint and steel and tinder (a piece of easily inflammable linen), became the best way of making fire (see Fig 17). The gas lighter, often shaped like a pistol, contains a small flint, and works on the same principle as the old fashioned tinder box. Compare also a pocket lighter.

Matches were first made in 1827. They contain a substance called phosphorus, which catches fire easily when warmed very slightly. The warming is achieved by rubbing the match head on a piece of glass paper on the side of the match box. The safety match has no phosphorus in the match head. It contains substances which help the match to burn quickly and brightly when the flame has been formed. In this case the

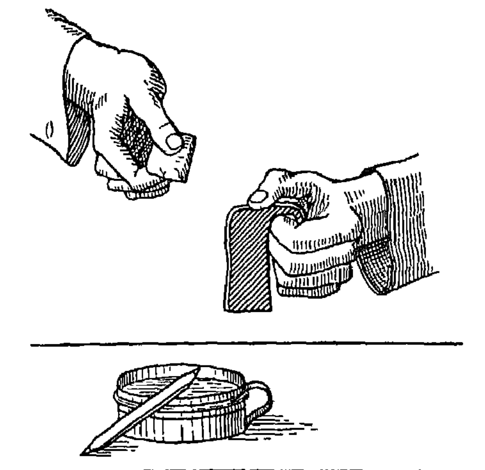


FIG 17 A TINDER BOX

phosphorus is in the glass paper on the match box, and, when the match is struck, a little is rubbed on to the match head and catches fire by friction. Thus safety matches are different from the "strike-anywhere" kind, which have the phosphorus in the match head.

It would be stimulating to divide the class into two groups and promote a competition to see which group can name the greatest number of examples of friction (*a*) as a nuisance and (*b*) as an advantage

Liquids such as water and gases like air also rub against things. The fact that liquids rub has already been suggested in discussing the movement of water through wide pipes and narrow pipes. The difficulty experienced in walking in water when bathing is also due to friction. A ship has to be forced through the water either by human effort by means of oars, by the wind by means of sails, or by an engine. The water rubs against the sides of the boat and pushes against the front of it Men have made vessels in various shapes In very early days men gave a ship a pointed prow to drive the water aside, so making way for the vessel more effectively. Much later men found that the vessel could move more rapidly if pointed both fore and aft. Therefore a fast vessel to-day usually has both ends tapered.

Air Resistance

Gases rub as well as liquids. Why does a pendulum slow down? Partly because of friction between the string bearing the pendulum and the support to which it is attached, but also because of *air resistance* on the bob

Air resistance means in other words rubbing of the air against solid objects which it encounters. It is a disadvantage when it causes the slowing down of a pendulum, but air resistance is often very useful, hence we have *sailing boats, windmills,* and *aeroplanes* Ask the children how *sails* help a vessel to move through the water? They will know that the wind fills out the sails and so carries the boat along, but that still air brings the vessel to a standstill. Thus they will realise that the sails and air rub against each other, and that only when the air is moving is the resistance great enough to move the vessel.

Similarly, discuss the question of a *windmill* The older type of windmill has four, five or six arms with sails attached. The sail is often made of canvas with a backing of wood arranged in a lattice formation. The wind or moving air pushes against these sails and turns them round The power so obtained was often used to move millstones for grinding grain, etc, and for pumping The wind does not always come from the same direction, and so some arrangement must be made to keep the sails square to the wind In the old windmills this was achieved by rotating the whole tower In newer windmills the dome only is movable It has a rudder or vane attached to it at right angles to the sails. This automatically moves the dome when the wind direction changes. The American, or annular, type of windmill, used very widely for pumping purposes, has a number of curved vanes made of metal and attached to rings so that they radiate from the centre of a circle which rotates when the wind blows.

Aeroplanes make very great use of the resistance of the air The wings of an aeroplane are inclined and curved, so that the air

pushes against them and forces the machine upwards. The power of the engine keeps the aeroplane moving The engine turns the propeller and the latter hits against the air, so it pushes its way forwards and so draws the machine through the air. The rudder or movable tail of the machine is used for steering, and it depends upon air resistance for its action.

Kite flying is an interesting subject, and can be studied by making and flying a kite, and then explaining why it flies. It would probably be stimulating to encourage the making of a kite since only cheap materials easily obtained, are needed.

Stages of Construction of a Kite

1 Use two pieces of soft wood as a foundation of the frame Arrange them crossing one another and tied with string as shown in (1) Fig. 18.

2. Make notches in the ends of the sticks and pass string around the frame from point A to B, C and D, finally joining at the starting point A as shown in (2).

3. Cover the string with strips of paper as shown in (3).

4. Cut a paper or cloth cover for the whole framework and fasten over the whole frame. Attach string as shown in (4)—one piece from P to Q and a second piece from R to S. At the junction tie on the kite line.

5. A tail is usually needed to balance the kite. This can be made of small pieces of paper attached at intervals on a piece of string The length of the tail can be determined by trial

When a kite is flown it may seem a little difficult to understand why it rises in the air. Ask the children whether they think it is lighter or heavier than air? It is, of course, heavier, and yet the kite when flying, is resting on the air, sailing on it just as a boat sails on water The kite is supported by the air. The moving air (wind) strikes a slanting kite which is near the ground and lifts it just as it lifts the wings of an aeroplane The force of the wind tends to drive the kite backwards, but so long as the kite string is held firmly, this will be

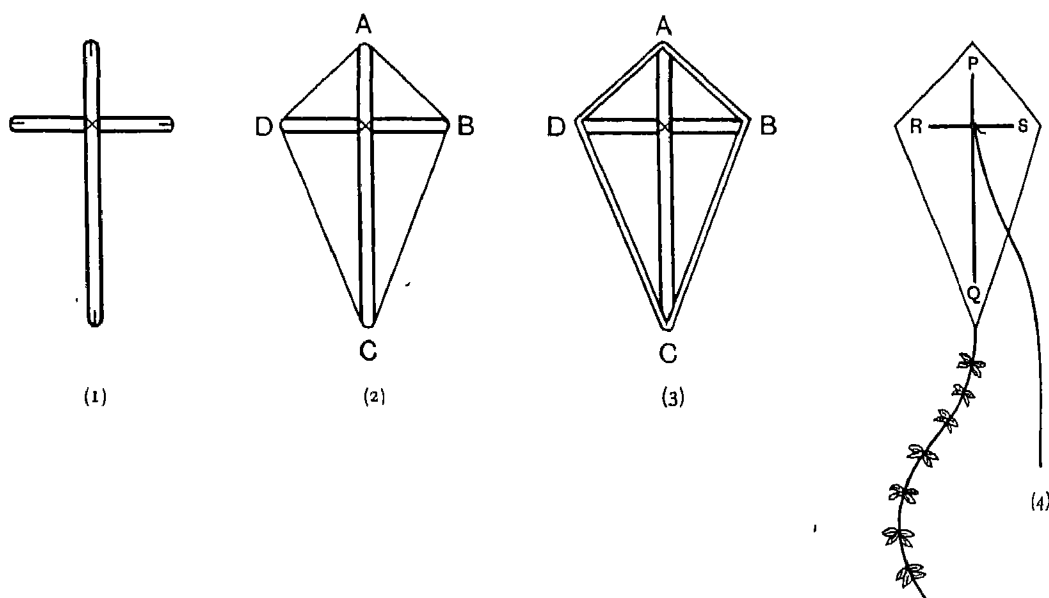


FIG 18 THE CONSTRUCTION OF A KITE

prevented, and the kite will rise It may be possible to explain that the air rushing round the kite leaves a space, which we call a vacuum, above the kite This space explains the fact that the kite is said to rest, or sail, on the air. Show how to "create" a wind on a fairly calm day by running with the kite, holding the kite string and lengthening the string as the kite rises

If there is time, tell of kite flying in China, or Japan, where it is a very popular sport. Ask if any pupil knows of uses of kites. Tell how they have been used to carry life lines to wrecked ships, to carry instruments for recording temperature and other conditions at high altitudes, etc. Benjamin Franklin, a great scientist of the eighteenth century, used a kite to obtain electricity from the clouds during a thunderstorm He attached a key to the kite-line, but held the kite by a silk ribbon attached to the line, so that the electricity should not pass into his body He was thus able to prove that lightning is electricity.

ATMOSPHERIC PRESSURE

The air presses on everything on the earth's surface. The pressure is the weight of the air and must be clearly distinguished from air resistance which is due to friction between the air and solid objects with which it comes into contact

The force with which the atmosphere presses can be illustrated very clearly by means of a *pump* if a glass model of one is available Show the parts of the pump—namely, the barrel with the spout by which water leaves the pump—the plunger, which fits tightly into the barrel, and the valves The latter should be merely noticed and their use observed when demonstrating the working of the pump

Demonstration

1. Arrange the pump so that the lower part of the barrel is under water (1) Fig 19

2 Push down the plunger.

3 Notice that as the plunger rises water is lifted into the barrel, (2). Explain that air cannot enter the barrel through the water and that it cannot enter through the upper end of the barrel because the plunger fits very tightly The children will realise as they watch that unless the water rises when the plunger is lifted, an empty space which we call a vacuum will result Ask if anything pushes water into the barrel? Tell them that air presses heavily on everything on the earth, and that its weight pressing on the water in the outer vessel forces water into the barrel when the plunger is raised

4. Tell the class to notice very carefully the behaviour of the valves It may not be easy to see the working of the upper valve, but simple drawings and explanation will supplement the demonstration. The plunger is lowered and air in the lower part of the barrel escapes through the valve *a* in the piston. The lower valve *b* is closed, (2). The plunger is raised. Valve *b* opens to allow water to enter the barrel but *a* remains closed, (3). The plunger is lowered a second time Valve *a* opens to allow water to pass through the piston, but valve *b* remains closed. This lowering and raising of the plunger may have to be repeated several times before the water in the pump reaches the level of the spout *S* and pours out of the pump

In further illustrating air pressure ask the children why it is possible to *drink lemonade through a straw*? Perhaps they will be able to explain that when a straw is put into a glass of milk or lemonade, the air presses on the liquid both inside and outside the straw. When a person begins to suck at one end of the straw he sucks out the air which is inside the straw. Air pressing on the lemonade in the glass forces the liquid into the straw, and if sucking is continued the contents of the glass can be drunk in this way

The principle of the balloon—Aeroplanes, kites, etc, which are heavier than air have to be forced up into the air, but things

which are lighter than air rise through it just as wood and cork rise through water.

Experiment

Fill a toy rubber balloon with coal gas, or hydrogen, tie it with string and release it. Compare its movement, up to the ceiling, with that of a second balloon blown up in the usual way with air. Explain that a large balloon is filled in the same way, and that airships, which have a framework which is heavier than air, are supported by gas bags filled with hydrogen.

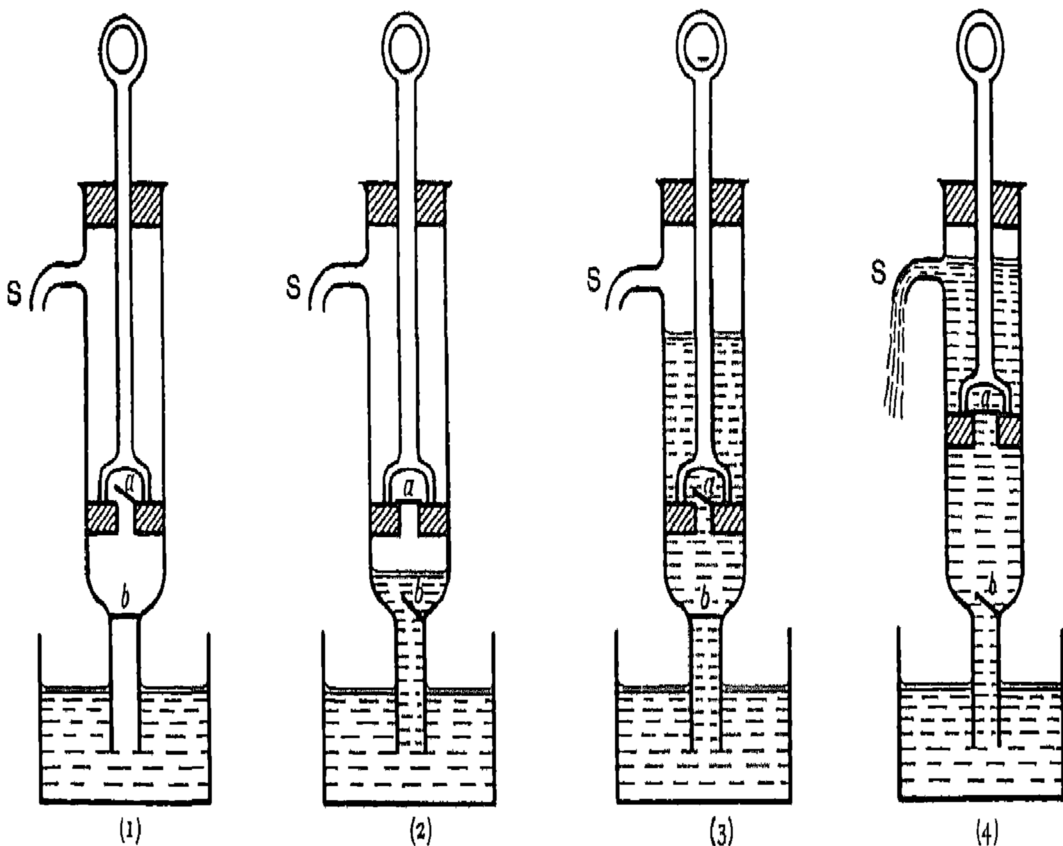


FIG. 19 HOW A PUMP WORKS
S SPOUT a UPPER VALVE b. LOWER VALVE

LESSONS FOR THE SECOND YEAR'S COURSE OF SCIENCE

THE simple and more easily explained facts concerning heat and sound afford much interesting material for a series of lessons extending over the second year. Household objects and various toys again serve as a means of practical demonstration, and a reasonable amount of the pupils' time may be devoted to making sketches of the more simple objects.

With young pupils, theoretical considerations concerning the actual nature of heat should be avoided, elementary facts and principles being the main object of study.

HEAT IN DAILY LIFE

The importance of heat in daily life might be taken as the subject for the earlier lessons

We all know the sensations hot and cold. Children will tell of times when they feel hot, e.g. after playing a vigorous game, and when they feel cold, e g. after standing still out of doors on a cold winter's day Tell them that our bodies contain heat and that if we lose some of it we feel cold and if we get too much, e g. when sitting very near to a fire, we feel hot

Some objects feel colder than others —If the classroom door has a metal knob ask one of the pupils to touch it and tell what it feels like. Compare by allowing the pupils to handle various metal objects, e g a retort stand, metal tap, etc They will find that all metal objects feel cold, unpleasantly cold in winter.

Repeat the experiment by providing other objects to be handled, e.g. corks, pieces of wood, a duster, etc The pupils will find that these feel warmer than the metal objects. Ask for the names of other objects which feel cold when touched, and still others which feel warm. Make them into two lists. It will be found that for solid substances metals are colder than other things Then explain that metal objects feel cold because they take away heat from our hands very quickly, but that many things, e g cork, wood, etc., feel warmer because they do not take away much heat Illustrate the use of this fact in everyday life by considering the use of cork in the home. Because cork does not take away heat from warm things with which it comes in contact, it is used widely for bath mats, to prevent a person from feeling cold after a hot bath. The same principle is at work when cork mats are put under a hot teapot or hot plates on a polished dining table to prevent the heat from the plates injuring the polished surface (Fig. 20).

Explain that things which are warm, such as hot water, hot drinks, etc., give extra heat to our bodies and so make us feel hot. Make quite clear the difference between this extra heat and the fact that cork does not take away heat.



FIG. 20 A HOT TEAPOT IS PLACED ON A CORK MAT

Clothing.—The influence of clothing may be discussed. Ask why more clothes are needed in winter than in summer? Undoubtedly the answer will be to keep us warm because it is cold in winter. Explain simply that since there is less sunshine in winter than in summer, the ground and the air are cold and they would take heat from our bodies, if we did not protect them with clothes. Clothes thus behave in a similar way to the cork mat. Some materials are better than others for keeping in warmth, e g woollen materials and fur are better than cotton materials. Therefore woollen materials are better than cotton ones for winter wear. In summertime we need to protect our bodies from receiving too much heat from the sun and at the same time allow heat from the body to escape. Therefore light woollen clothing is useful in summertime because it will allow air to pass through it to cool the body, and yet will not allow too much of the sun's heat to pass. Ask why straw hats are suitable for summer wear and felt for winter. Explain that the straw protects the head from the heat of the sun but also allows air to pass through to cool the head. Emphasise the importance of protecting the nape of the neck when the sun is shining strongly. In winter felt hats, which are made of wool, protect the head from losing too much heat, but the same hats in summertime would feel hot because they would prevent heat from escaping from the head. Explain as simply as possible that the colour of clothes is important Dark coloured clothes take more heat from the sun than do light coloured garments, and so we find it is more comfortable to wear light coloured garments in summertime, e.g light coloured dresses, white flannels, light coloured hats, etc.

Experiment

1 *To demonstrate the effect of colour on the amount of heat taken in from the sun* —If two tins are painted one black and one white, filled with water, covered over with lids and left in the sun for a few hours it will be found by testing the water with a thermometer that the water in the black tin is warmer than that in the white tin. Since both were exposed to the sun for the same length of time, the difference must be due to the different powers of absorption of black and white (Fig. 21).

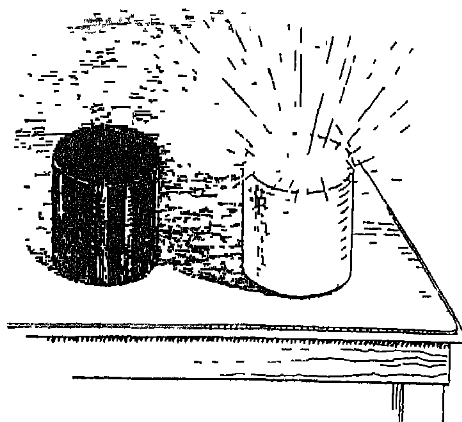


FIG. 21 TO DEMONSTRATE THE EFFECT OF COLOUR ON THE AMOUNT OF HEAT TAKEN IN FROM THE SUN

Man takes advantage of the fact that some substances lose heat easily whilst others do not. Encourage the children to tell of examples. Ask why metal kettles, especially those made of aluminium, often have wooden handles? (Fig 22). How can ice be kept from melting if a small quantity is bought for use in the home? Woollen material, such as flannel, wrapped round the ice will prevent warmth reaching the ice to melt it Sawdust behaves similarly.

A vacuum flask

A vacuum flask is extremely useful for keeping liquids hot; because heat can escape through the walls of the flask only very slowly (Fig. 23). The glass container, which is found inside the metal case of the thermos flask, has double walls which are joined only at the neck. It therefore resembles

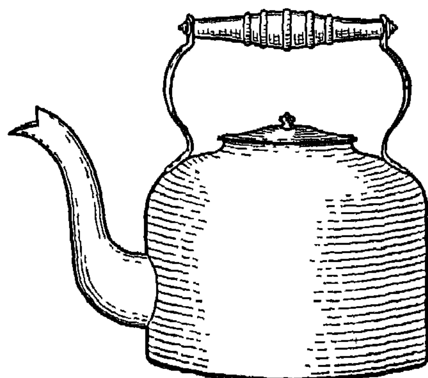


FIG 22 METAL KETTLES OFTEN HAVE WOODEN HANDLES

two vessels, an inner and an outer. The space between the two walls is exhausted of air during the making of the flask The projecting point seen on the glass vessel shows where the flask was sealed after exhaustion of the air. The vacuum thus formed will prevent any rapid loss of heat from the interior. The cork which is inserted in the mouth of the flask does not allow heat to escape easily and so liquids can be kept hot in a good flask for about twenty-four hours The sides of the glass container are silvered and this bright surface also reduces loss of heat Since heat cannot escape quickly neither can it enter rapidly and so the flask is equally useful for keeping cold liquids cool in hot weather.

By this time the class will be familiar with the fact that our bodies lose heat if not protected by clothing and supplied with fresh heat from food, etc. Animals and all living and non-living things tend to lose heat constantly, so that renewal is necessary. The bricks of which houses are built, stone, metal, glass, sand, water, plants, etc., all become very hot when the sun shines on them during the daytime, but at night they lose heat and may become very cold. All the heat obtained on the earth comes from the sun, although it is about 93,000,000 miles away. It shines across apparently empty space and, unless hindered by clouds near the earth's surface, heats the earth considerably each day The heating power of the sun varies at different times of the year, partly because it shines for less time in winter than in summer and because it is not so high in the sky in winter as in summer. Therefore we speak of the *seasons of the year*. In winter when the days are shortest the sun gives us less heat than at any other season We keep our bodies warm by wearing woollen clothing and indoors we warm our houses by means of fires, etc Many animals sleep through the winter, rolling themselves up snugly underground or in some well-protected spot, e g. dormouse, squirrel and tortoise, etc. Many plants die down in winter and in our country most trees shed their leaves so that they shall not be killed by frost. The new leaves which will open the following spring are well protected by being wrapped up inside waterproof buds. In springtime days grow longer, there is more sunshine and therefore more warmth Animals emerge, birds arrive from the warmer countries in which they spent the winter They build nests and rear young. Tree buds open and flowers begin to appear In summertime, the warmest season, plants and flowers grow rapidly, insects are abundant and many of them collect honey and pollen from the flowers for their winter store At the end of the summer flowers die and fruits form.

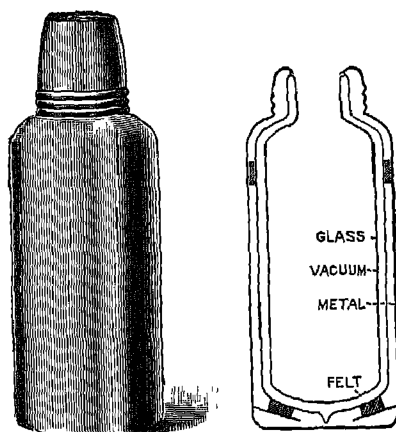


FIG. 23. A THERMOS FLASK

Men and animals collect fruits for winter food. Seeds are scattered and rest in the ground till the following spring.

Fuels

Next consider the fuels which we use to warm our houses in winter. Wood has been made by the trees with the help of warmth and light from the sun. Coal is a storehouse of sunshine because it is the result of alteration of timber which grew in forests which lived millions of years ago It has been called "bottled sunshine" whose warmth is set free when we burn the coal We use coal fires in our houses, but in large buildings such as schools, it is not the cheapest and best way to have a coal fire in each room Usually there is a *hot water apparatus* in schools This can be made the subject of an interesting lesson. If the school is heated by such a system it is interesting and profitable to take the class to see the boiler and the pipes which lead into it and from it. Try to trace the course of pipes through the building Explain the way the system is constructed and draw a diagram (Fig. 24). Fuel, usually coke or coal, is burnt in a furnace or boiler in the basement This boiler is very efficient because the furnace is surrounded by water. The water heated in the boiler travels through pipes taking its heat along with it. In this way it passes through iron pipes and radiators all over the building. As the water passes through these pipes it loses warmth which heats the rooms in which are the radiators, it therefore passes into a return pipe which leads it back to the boiler to be re-heated. Thus water is constantly moving through the pipe. At the top of the building is a tank, which is the highest point of the system Explain that hot water takes up more room than cold, and this tank allows room for this expansion and so prevents any possibility of explosion. The pipe at the top of the tank allows air or steam to escape and thus acts as a safety valve. In addition, each radiator has an air cock at the top to release air, which is gradually given off from the water

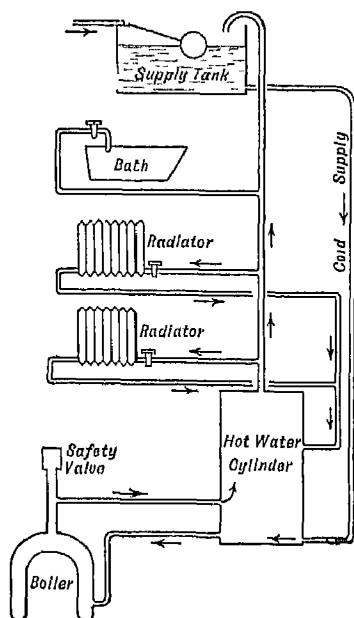


FIG 24 DIAGRAM SHOWING THE ARRANGEMENT OF PIPES, ETC, IN CENTRAL HEATING CONNECTION CURRENT INDICATED BY ARROWS

Experiments

1. *To show how water is heated*—Drop a crystal of potassium permanganate carefully into a beaker of water (as near the middle as possible). Heat the beaker very gently and notice what happens A stream of colour rises up the middle of the beaker to the top and then descends again down the sides of the beaker to the bottom (Fig. 25). Ask why the coloured water rises? The water is warmed first just above the burner and moves upwards, its place being taken by cold water which moves in from the sides of the beaker. The water thus moves round in a current, and in just this same way water moves through the pipes of a hot water system and returns to the boiler.

Mention that sometimes in large factories where steam is used for driving machinery

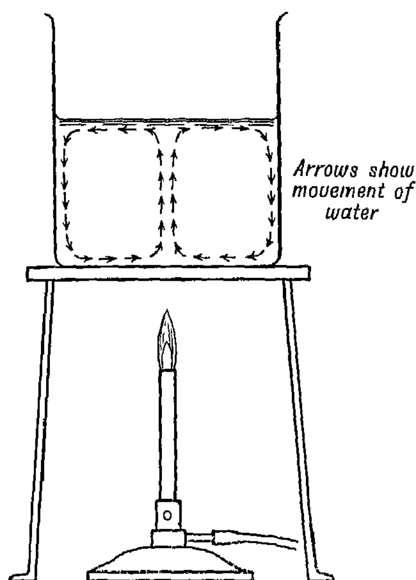


FIG. 25 TO SHOW HOW WATER IS HEATED

it is also used for heating the building. Electric heaters depend upon the use of coal, which is burnt to make the electricity

Heat does work for us—Interest may be maintained by studying the expansion of various objects particularly heated metals

2 *To show that a metal expands or grows larger when heated*—(*a*) This may be shown by heating a metal ball which just passes through a metal ring or loop when cold. When hot it will be found that the ball is too large to pass through the ring (Fig 26)

(*b*) If ball and ring apparatus is not easily available the experiment can be performed using two bricks and an iron weight Arrange

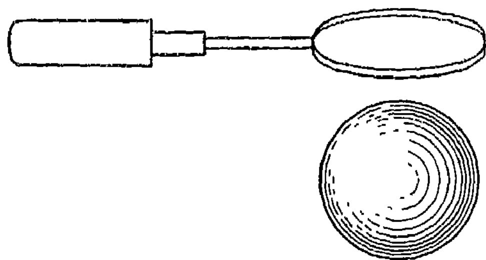


FIG 26 BALL AND RING USED TO SHOW THAT A SOLID EXPANDS WHEN HEATED

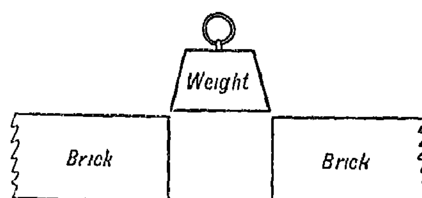


FIG 27 TWO BRICKS AND A METAL WEIGHT USED TO SHOW THAT A SOLID EXPANDS WHEN HEATED

the bricks so that the weight just passes between them when cold, heat the weight and it will be found too large to pass between the bricks when hot (Fig. 27)

(*c*) A strong wire stretched between two supports will sag when heated (Fig 28).

Tell of examples in which account is taken of the expansion of metals in everyday life Railway lines are laid with small spaces between the ends to allow for expansion. Telegraph wires sag more in the summer than in winter In making steel bridges allowance must be made for expansion.

Metals are solids and therefore have a definite shape and form, and expansion can be measured fairly easily. Many substances are best known when they are in the liquid state, e g. water. Liquids also expand when heated as has been mentioned in the description of the hot water apparatus.

3. *To show that a liquid expands when heated*—Fit a glass flask with a cork which is bored with one hole Pass a piece of glass tubing through the hole in the cork The tubing must fit tightly. Fill the flask with water which is coloured with red ink or potassium permanganate and insert the cork so that the liquid rises a little in the tube. There must be no air between the cork

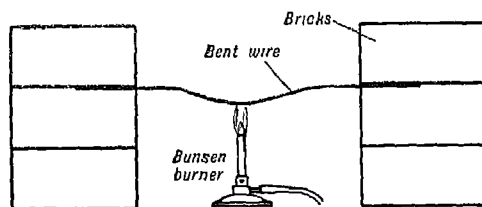


FIG 28 A WIRE STRETCHED BETWEEN TWO SUPPORTS WILL SAG WHEN HEATED

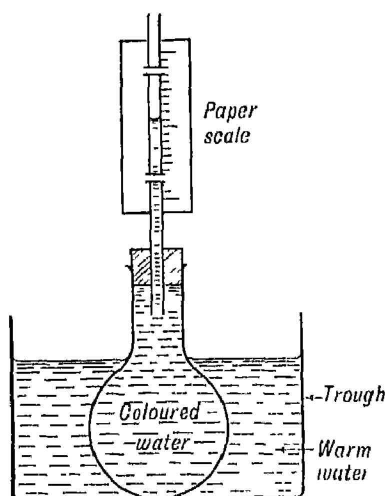


FIG 29. TO SHOW THAT A LIQUID EXPANDS WHEN HEATED

and the water in the flask. Arrange a paper scale behind the tube and mark on it the level of the liquid Now dip the flask into warm water. Very soon it will be noticeable that the liquid is rising in the tube showing that it expands or requires more room when warmed. Remove the flask from the warm water and notice that the liquid falls in the tube or in other words the water contracts when cooled (Fig. 29)

4 *Do other liquids expand?*—Fit up other flasks or test tubes containing water, methylated spirit and turpentine respectively. Plunge them into warm water and note results. They, too, expand. It may be observed that one of them expands more rapidly than the other. Notice, also, that liquids expand more than solids for the same rise in temperature.

Some substances are called gases. They are usually invisible, and, unlike solids or liquids, they can fill any space or vessel which contains them If a little coal gas escapes into a room it can be smelt in all parts of the room after a short time, because it has spread itself through the air, till there is some of it in every part of the room. Air is a gas. Gases expand when heated just as solids and liquids do

5. *To show that a gas expands when heated.*—(*a*) Fit a flask with a cork and tube as in the last two experiments. Before inserting the cork in the flask suck a drop of red ink into the end near the cork (Fig. 30A). Insert the cork and then warm the flask by holding the bulb in your hands. The drop of red ink will move up the tube. Ask the pupils if the flask is empty, as it appears to be? Explain that it is full of air, which expands when the flask is warmed If the flask is allowed to cool, the drop of red ink moves back to its original position.

(*b*) The experiment may be performed in a second way. Use the same flask but invert it so that the end of the tube dips under water in a beaker (Fig. 30B) Again warm the flask with the hands. The air expands, and since there is not enough room for all of it in the flask, when it is warm some of it escapes and bubbles of it are seen coming through the liquid When allowed to cool, the air in the flask gets smaller, and since

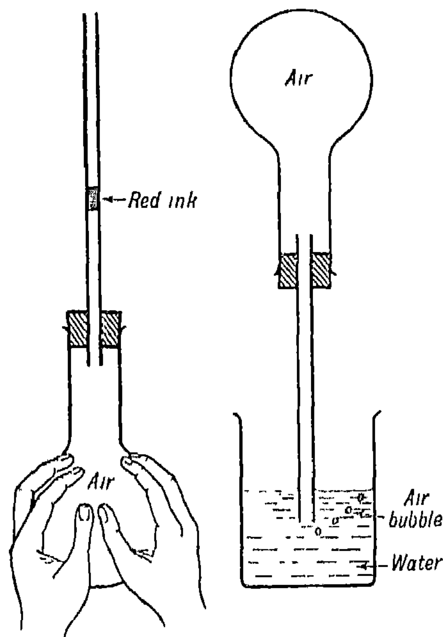


FIG 30A FIG 30B
TO SHOW THAT AIR EXPANDS WHEN HEATED

there is now less air than at first, water from the beaker rises in the tube.

Notice that gases expand more than either solids or liquids for the same rise in temperature. Air in a flask expands noticeably when the flask is warmed with the hands A liquid in a flask needs to be heated gently with a flame before it expands noticeably, and a solid needs to be heated strongly.

We make use of the fact that a liquid expands when heated and contracts when cooled in the construction of a thermometer. Ask what is the use of a thermometer? It is used to measure hotness or coldness of the air, liquids, our bodies, etc. It may be thought that a thermometer is unnecessary except for things which are too hot for us to touch, but it should be demonstrated that the sense of touch may be deceptive.

The fact that gases expand when heated is made use of in a *hot air balloon.* The balloon is composed of a large bag of fabric e.g., linen, and is filled with air. The first hot air balloons were made to rise by making a fire on the ground under the open end of the balloon. This made the linen bag inflate and rise in the air. Why? Air when heated expands and also becomes lighter Soon, however, the air enclosed in the bag cools and the balloon comes to the ground Then men learned how to hang a vessel containing burning material near the open end of the balloon and so kept the air inside the bag hot. In this way hot air balloons could remain in the air much longer. Later they were superseded by balloons filled with hydrogen.

6 *To prove that the sense of feeling cannot be relied upon to tell temperature*—Arrange three basins in a row They should contain hot, lukewarm and cold water. Ask a pupil to put one hand into the hot water and the other hand into the cold water. After about half a minute tell the child to put both hands into the lukewarm water Ask what the water feels like to each hand The child will say it feels cold to the hand which had been in the hot water, and warm to the other which had been in the cold water. Thus it is proved that feeling is not to be relied upon, because all the lukewarm water has the same temperature.

A game may be arranged in a similar way by blindfolding a child and bringing him into a room where four basins of water, one hot, one cold and two tepid (same temperature), are arranged in a row Dip his right hand into the hot and his left into the cold water for half a minute Then dip his hands into the two basins containing lukewarm water of the same temperature and ask him which is the warmer. On replying he will be surprised to learn that they are the same temperature Test them with a thermometer to complete the experiment.

A THERMOMETER

1. The liquid in a thermometer is usually mercury, but alcohol is sometimes used, and if so it is coloured.

2. Notice that the instrument consists of a long sealed tube and having a bulb at one end.

3. Show a piece of thermometer tubing to illustrate the narrowness of the hole through the tube. This hole is called the bore of the tube The bore is narrow so that a small increase in the size of the liquid will cause a large rise of the liquid in the tube.

4 Notice that the bulb is wider than the stem, and compare it and the tube with the flask and tube used in the experiment to demonstrate expansion of a liquid. Explain that this flask is a rough kind of thermometer which will show the temperature of different liquids into which it is dipped, by the different levels to which the water rises in the tube

5 The flask of water has no marks on the tube but a thermometer has. Show that these marks are at equal distances apart and so they record equal rises of temperature. They may be thought of as steps, each one equal to the one above, or below it The divisions are called degrees

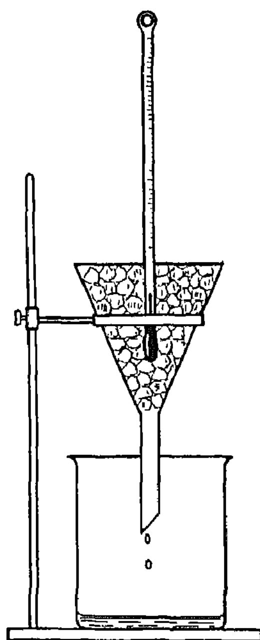


FIG. 31 TO FIND THE TEMPERATURE OF MELTING ICE

Certain important temperatures should be learned.

Experiments

1. Plunge a thermometer into ice and when the mercury is steady read the temperature 32°. This is obtained if a Fahrenheit thermometer is used (Fig. 31). A Centigrade thermometer gives 0° as the temperature of melting ice. For ordinary purposes the Fahrenheit scale is used, so that it is best to use this with young children unless the only thermometers available are of the Centigrade type. Explain that Fahrenheit was the name of the man who made the first thermometer with this numbering.

2. Suspend a thermometer with its bulb in boiling water in a flask. (Do not allow the bulb to touch the bottom of the flask.) Notice the temperature 212° F. (Fig 32)

3. Hang up a thermometer in the classroom and so obtain the temperature of the air The temperature of a comfortable room is 60° F.

4 The temperature of the human body is 98 4°, if the person is healthy. The thermometer is put in the mouth or under the arm and left there for about 1 minute The doctor has a thermometer different from that used in a classroom or laboratory. Its scale varies from 95 to 110° F only, because the temperature of the body does not vary much.

Just above the bulb the tube is very narrow. After the doctor has taken a temperature, the narrow part of the tube stops the mercury from sinking back into the bulb and so allows him time to read the temperature. When he has read the temperature, he shakes the thermometer and this makes the mercury sink back into the bulb again. If a clinical thermometer is available take the temperature of some of the pupils.

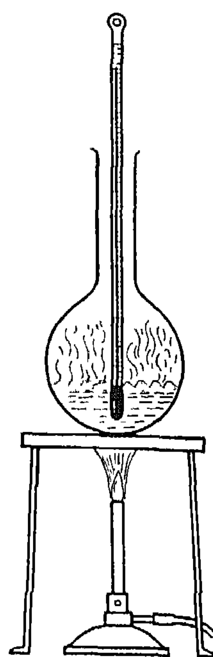


FIG 32 TO FIND THE TEMPERATURE OF BOILING WATER

CHANGE OF STATE

We have seen that some substances are solids and have a shape of their own, whereas others are liquids, taking the shape of the vessel they occupy. Both solids and liquids have a definite size, but gases have neither shape nor a definite size, they fill any vessel which they occupy.

Examples of solids could be obtained from the children, who will be familiar enough with wood, iron, ice, sealing wax, butter. Similarly, allow the children to suggest substances which they know are liquids, e g water, turpentine, methylated spirit and petrol. Ask if they know of any other substances which are gases besides air? Perhaps they may have heard of the use of hydrogen for airships. Steam and coal gas are familiar examples of gases.

Experiments

1 *To study the effect of heat on various solids.*—Heat a little ice gently in a beaker. Notice that it changes gradually into water. Repeat, using other solids, e g. butter, paraffin wax, sealing wax, sulphur, etc. N.B.—A metal spoon, such as a deflagrating

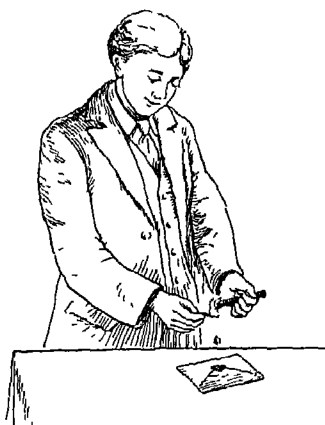


FIG 33 MELTED SEALING WAX IS USED FOR SEALING LETTERS

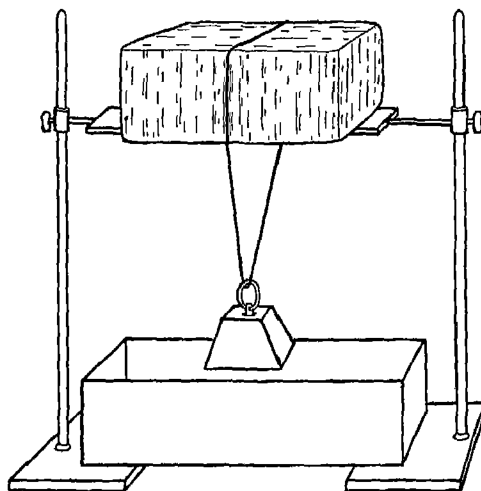


FIG 34 TO DEMONSTRATE THE MELTING OF ICE UNDER PRESSURE

spoon, is suitable for heating a small quantity of a solid. Let a pupil seal a letter with sealing wax (Fig. 33)

Notice which substances melt easily and which need strong heating. Test a few metals such as magnesium, tin, lead, copper and the iron spoon itself. The magnesium may be seen to melt just before it catches fire, and the tin will melt, but many metals cannot be melted in the bunsen flame. Magnesium burns with a very bright flame. Warn the pupils of the glare and be careful not to burn the metal too close to them. Explain that in very hot furnaces iron can be turned into a liquid. Tell how the blacksmith can beat iron into required shapes, e g horseshoes, when the metal is red hot. Mention the use of solder for making a firm joint.

Ice can be melted by pressure as well as by heating

2. *To demonstrate the melting of ice under pressure.*—Support a block of ice by resting it on clamps fixed to two retort stands. Pass a wire over the ice and suspend a weight from it. The weight causes the wire to press heavily on the ice and melt a little of it. The water flows above the wire and freezes again. This goes on until the wire has passed completely through the ice (Fig. 34).

Snowballs are made by pressing the loosely packed snow crystals together. The pressure of a child's hands melts the surface snow, but when the pressure is released freezing occurs again and a compact ball is made (Fig 35).

3 *Compare snow and ice.*—Ice forms when water in the ground or in ponds and rivers



FIG. 35. THE PRESSURE OF THE HANDS MELTS THE SURFACE SNOW

freezes. Snow forms in clouds high above the ground when the temperature falls very low. The flakes which fall to the ground are composed of snow crystals. If a few flakes are caught on a piece of velvet and examined with a magnifying glass the crystals can be distinguished. A wonderful variety of shapes will be discovered.

4 *What happens when a liquid such as water is heated?*

Heat a little water in a glass beaker At intervals insert the bulb of a thermometer in the liquid and notice the gradual rise of temperature. When the water is hot, steam will be seen to rise from the surface. Eventually the temperature reached is 100° C or 212° F according to the type of thermometer used At this point the water boils, i e. the liquid is disturbed, bubbles escape from it and a cloud of steam rises from the surface Boil the water for a few minutes and notice the temperature. The temperature remains at 100° C or 212° F. What is the heat being used for? To turn the water into a gas. The cloud of steam passes into the air and cannot be seen at a little distance from the beaker. Emphasise the fact that although the water has boiled away it is still present in the air as water vapour—a gas

If a little boiling water is transferred to a porcelain dish, it can be heated until it has all boiled away and the dish is dry. At this stage in a science course it is difficult to distinguish between steam and water vapour. It should be possible to speak of steam as the visible cloud above the beaker—visible because it is composed of tiny drops of liquid—and the water vapour as the gas which spreads itself through the air and which is invisible. Similarly white clouds of steam are seen a little above the chimney of a locomotive and may be compared with that arising from the surface of water in the beaker.

Other liquids "disappear" or change into a gas when boiled

5. *To show that methylated spirit boils away*—N B Do not heat this inflammable liquid over a naked flame The simplest way to heat methylated spirit is to stand a test tube of it in a vessel of very hot water The water may be heated gently with a low flame. The methylated spirit will boil and the presence of its vapour in the air will be noticeable because of its smell (Fig. 36). Great care is needed when the teacher is demonstrating this experiment. Since the spirit boils at a lower temperature than water, the test tube containing spirit may be put into a beaker of boiling water and the flame of the burner extinguished. The methylated spirit will boil for a few minutes, probably long enough to give a result. If not, a very low flame may be used under the beaker, but on no account must the test tube be heated directly by the flame.

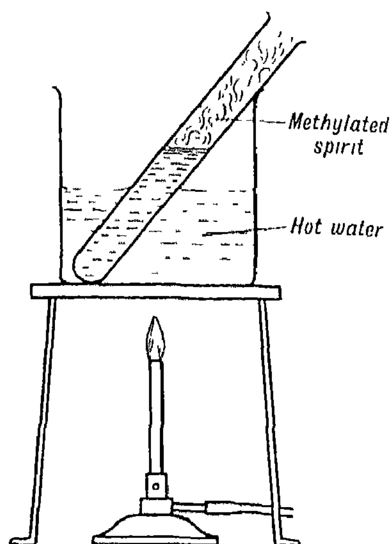


FIG 36 BOILING METHYLATED SPIRIT


FIG 37 THE VAPOUR OF A CANDLE BURNS

6. The change from solid to liquid and liquid to gas can be demonstrated very simply with *a candle and match* (Fig. 37). Light the candle and allow it to burn for a few minutes until the wax is melted. Blow out the flame and notice the vapour which is rising from the wick. Hold a lighted match above the wick and notice that the vapour relights and then its flame relights the candle

N B. (*a*) The wax is melted.
(*b*) The liquid formed turns into vapour.
(*c*) The vapour burns.

Solid changes to liquid, liquid to vapour or gas, and gas burns.

THE STEAM ENGINE

When water is boiled in a kettle the lid of the kettle is lifted up and down as the water boils What lifts the lid? The steam, in trying to find more room than it has inside the kettle, is able to lift the lid by pressing against it This power exerted by steam is used by man. *Steam* enclosed in a boiler exerts pressure and this *power* is used *to work an engine*

A toy steam engine, properly fitted with a safety valve, should be used, if available, to illustrate one or more lessons on the steam engine What are the essential parts of the steam engine?

1 A vessel to contain water, supported on wheels which are flanged to run on rails

2 A heating lamp which corresponds to the furnace in the locomotive

3 A mechanism which can set the wheels in motion

4. A pipe from the water container (boiler in a locomotive) to this mechanism.

What must be done to make the toy engine work?

1. Give it a supply of water

2. Light the lamp under the engine (or methylated spirit lamp)

3. After allowing the water to boil for some minutes turn on the tap to admit the steam to the cylinder which is connected to the wheels.

What makes the wheels go round?

1. Just as steam can lift the lid of a kettle so it can move a portion of the engine which is not fixed.

2 The engine consists of a cylinder in which is a circular disc, the piston, fitting loosely into it. A light rod, the piston rod, is attached to the piston. The piston rod is attached to the wheel

3 Steam is admitted to the cylinder and drives the piston forward and so by means of the rod and a crank the wheels are moved half a turn (Fig. 39A)

How are the wheels moved the other half turn? This is accomplished by pushing back the piston to the starting point. Steam must be admitted at the other end of the cylinder. Therefore there are two steam entrances to the cylinder—

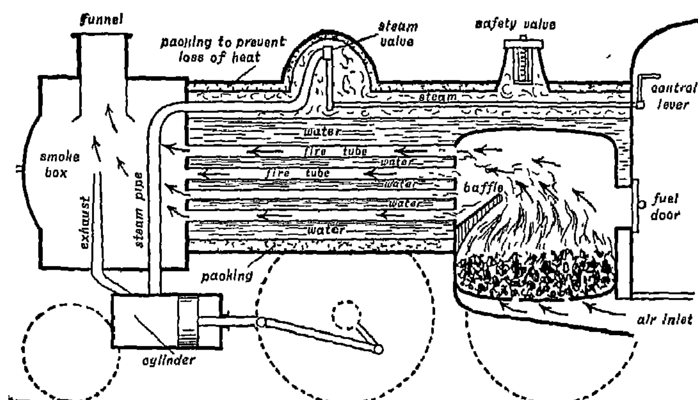


FIG 38 VERTICAL SECTION THROUGH THE BOILER OF A LOCOMOTIVE

one near each end. When one is open the other must be closed (Fig. 39B).

In many toy engines the cylinder oscillates, i.e. moves with a swinging motion to and fro with the turning of the wheels. This oscillation causes the cylinder to move so that the pipe leading from the boiler sends steam into the cylinder first by one entrance and then dy the other, thus moving the piston up and down. Thus one entrance is closed whilst the other is open (Figs. 39 C and D).

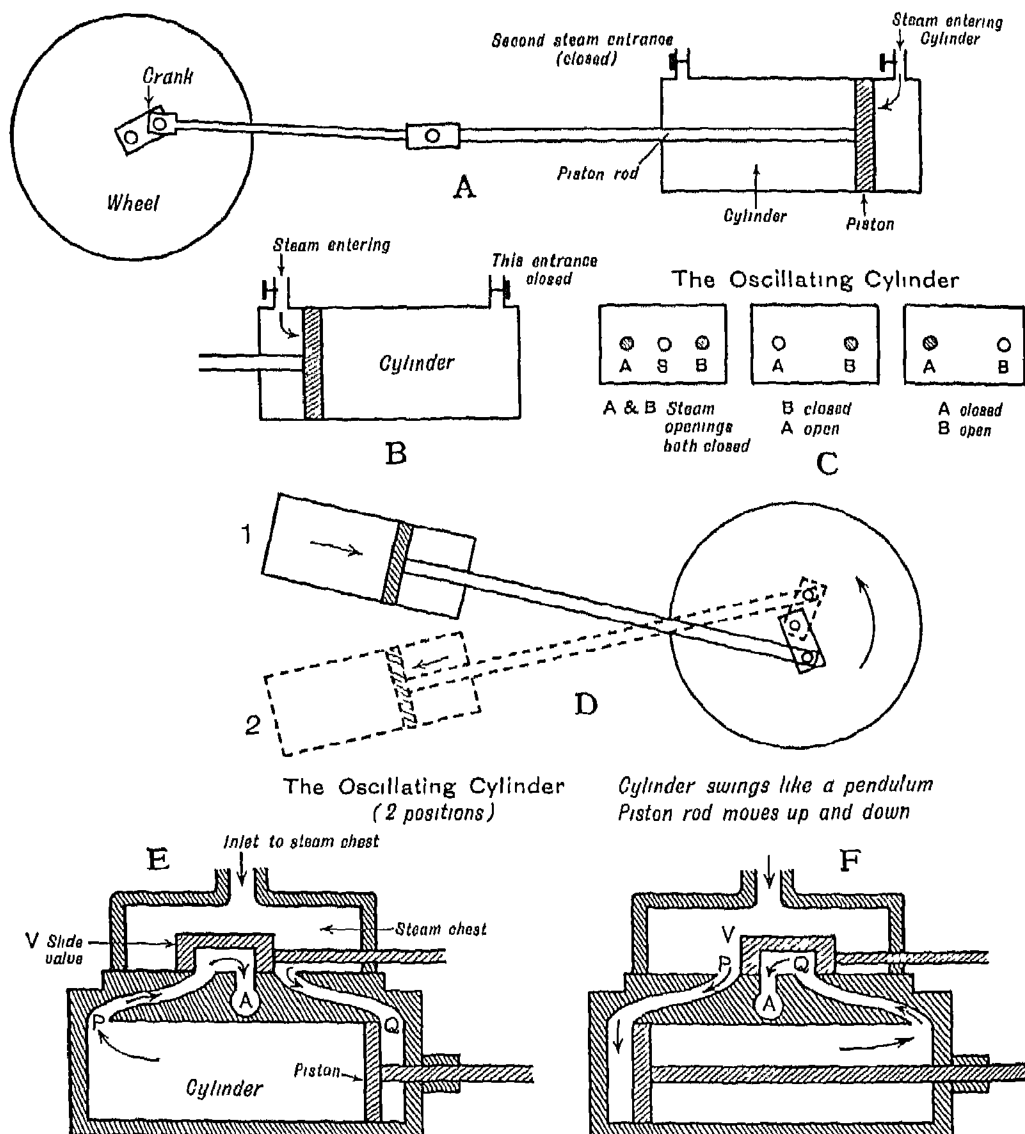


FIG 39 THE WORKING PARTS OF A STEAM ENGINE

In the locomotive and the more expensive type of toy engine the cylinder is fixed, and the steam is admitted to the cylinder by a *slide valve* which opens and closes the two steam entrances alternately and also allows the steam to escape by an exhaust. Study the accompanying diagrams In diagrams E and F the whole of one stroke of the piston and the beginning of the next are shown. In diagram E the piston has been pushed to one end of the cylinder by steam which was admitted at entrance *P*, now closed. Entrance *Q* is open and steam from the steam chest will enter at *Q*, as shown by the arrow, and will push the piston along the cylinder. While this is going on steam already in the cylinder will be expelled via *P* which is now only open to the exhaust *A* (see arrows) Diagram F shows the position of the piston at the end of the stroke It also shows that *V* has moved so that entrance *Q* is closed and *P* open ready for the next stroke. The arrows in this figure show that when the next stroke begins steam will enter at *P* and be expelled to the exhaust via *Q*. *A* exhausts the steam during each stroke and communicates with the outside air only. It is thus obvious that the slide valve *V* moves backwards and forwards, moving the piston, which in turn moves the driving wheel.

The way in which the slide valve is operated by the eccentric is a difficult point and should be avoided unless a good model is available.

Why does the child call the engine a "puff-puff"?

Steam escaping from the cylinder rushes up the funnel of the engine (the real locomotive) in a series of jerks. The noise produced accounts for the name given to the engine by the child

The engine's whistle —A child likes to hear the sound of the whistle. By turning a tap steam rushes through the whistle thus blowing it. Compare this with blowing air through a whistle, and with a whistling kettle

A little about the *history of steam engines* will be of interest. As long ago as the second century B C. Hero of Alexandria made steam apparatus, and yet it was not until the eighteenth century that the idea of the steam engine began to develop in England and France James Watt, an instrument maker at Glasgow university, invented the modern steam engine in 1769. Watt is known to boys and girls by the story of how he watched steam lifting the lid of a kettle and pondered the possibilities of that power, finally using it to work an engine which could be used for pumping Richard Trevithick, in 1802, made the first locomotive to travel on rails. Its speed was five miles an hour, and it was used on a mineral railway at Merthyr Tydvil. No man did more towards the development of the steam engine than George Stephenson His first engine was completed in 1814. When the Stockton and Darlington railway was opened in 1825 his engine, *Active*, afterwards called *Locomotion*, was the first to be used to draw passengers and goods Stephenson's invention of the *Rocket* assured the future of railways. It was completed in 1829 and won a £500 prize offered by the Liverpool and Manchester railway for the best locomotive engine The first steamboat having a paddle at the stern was invented in 1802 by Symington.

WATER TURNS INTO VAPOUR WITHOUT BEING BOILED

Ask for examples in everyday life in which water *evaporates* in this way, e.g. pavements dry quickly after a shower of rain on a warm day. When wet clothes are dried, the water they contain evaporates. Evaporation is constantly going on from the surfaces of all ponds, lakes, rivers and seas. This change goes on more quickly on a warm day than when temperatures are low. Wet clothes can be dried more quickly on a cool day if put near a fire. Thus a high temperature hastens evaporation, but the

change can take place at almost any temperature. Whatever the temperature, evaporation requires heat, and in the absence of a flame, etc., heat is taken from surrounding objects. For this reason it is inadvisable to sit in damp clothes. The moisture will evaporate and heat for the evaporation will be taken from the body. This may possibly result in a chill

Other liquids evaporate, some more readily than others Ether, methylated spirit and petrol are examples of liquids which evaporate rapidly.

Experiments

1. *Put a little water, ether and methylated* spirit on separate saucers, or watch glasses. (Keep the ether and methylated away from any flame.) Set the saucers aside for a few minutes.

Notice that the saucers containing ether and methylated dry quickly, the ether evaporating more quickly than the methylated spirit. Leave the saucer containing the water for several hours and examine again The water evaporates much more slowly than the other liquids.

Since evaporation is going on constantly from all moist surfaces the air always contains water vapour. If the air is cooled the vapour turns back again into water. Clouds are one of the first results of this cooling They consist of very small drops of moisture which are so small that they remain suspended in the air for a long time. If they are cooled still further these small drops join together to form larger drops which are raindrops.

2. Bring a glass beaker containing pieces of ice into a warm room. Notice what happens to the glass. It becomes cloudy because a film of water forms on it. Where has this come from? It was present in the air as water vapour. When the cold beaker cooled the air near to it, some of the vapour was cooled and turned back again into water (Fig. 40).

Although the method by which the air is cooled is not identical, this experiment can be used to illustrate the explanation of the formation of rain.

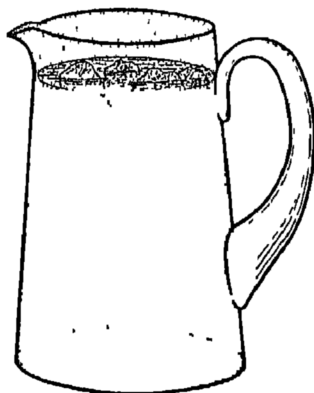


Fig 40 The Outside of a Jug containing Ice and Water Becomes Covered with Moisture in a Warm Room

THE CHIEF KINDS OF CLOUDS

Clouds do not all look alike. Ask for descriptions of any clouds which the pupils may have noticed. Do not emphasise the names, but rather the types and the associated weather, e.g. the great white rolling clouds which are common on fine summer days particularly in the afternoon and evening (*cumulus*). The light feathery clouds very high up (about six miles above the ground) often have a brushed-out appearance. The air is so cold at such great heights that these clouds are made of tiny crystals of ice (*cirrus*). These clouds are associated with fine weather. The low, heavy clouds, dark at the base and associated with thunderstorms, will probably be remembered by the children (*cumulo-nimbus*). The dense, shapeless, dark cloud which brings steady rain, is often called the rain cloud

Mists and fogs may be described as clouds near to the ground. A fog is darker in colour than a mist because each drop of water has a particle of dust in the centre of it.

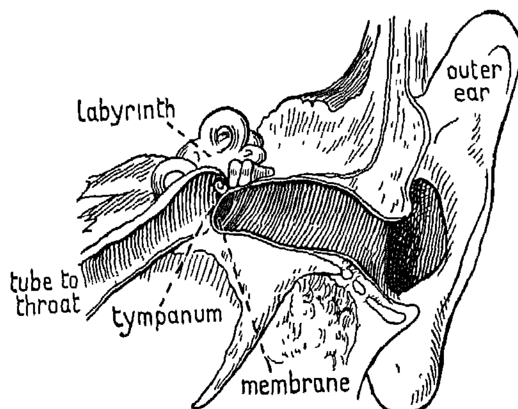


FIG 41 SECTION THROUGH THE HUMAN EAR

SOUND

In the study of sound an introduction may be made by considering what happens when we hear a noise. Ask for causes of sounds Children may suggest—speaking, clapping hands, banging a door, stamping, blowing a whistle, etc. Consider what happens when a desk lid is banged. Three things occur.—

1. The desk shakes.
2. The air shakes
3. The little bones in our ears shake, causing us to hear.

Experiments

To illustrate vibration which occurs when a noise is made.—

1. Strike a prong of a tuning fork against the table Hold it up and look at the prongs. It will be noticed that their outline is blurred.

2. Repeat the same experiment, this time holding the fork so that the prong touches the lips or teeth, and so *feel* the movement or vibration

3 Touch a suspended pith ball with the prong of a tuning fork which is vibrating, and notice that the ball moves (Fig 42)

4. Strike the fork and *touch the* prong lightly on the surface of water in a large bowl. Notice the ripples caused by the vibration

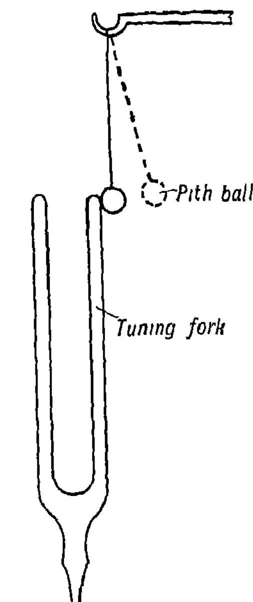


FIG 42 TO ILLUSTRATE VIBRATION

When we hear a sound how does the noise reach our ears? It travels through the air. Take away the air and we are unable to hear any sound. An interesting experiment will prove this.

5 *To prove that air carries sounds to our ears*—Put a little water into a flask fitted with a cork and a small piece of glass tubing to act as a safety valve. The flask used should not have a flat base Suspend a small bell by wire from the cork. Fix a small piece of rubber tubing on to the glass tube. Shake the flask and notice the sound made by the bell. Fasten the rubber tubing with a clip, and again shake, noticing the difference in the sound Then open the clip, boil the water for a few minutes till all the air has been expelled because the steam has pushed it out Turn out the gas and clip the rubber tube. When cool, shake the flask and notice that the sound can scarcely be heard because there is no air to carry the sound out of the flask (Fig 43).

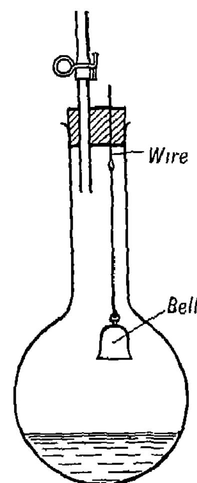


FIG. 43
TO PROVE THAT AIR CARRIES SOUND TO OUR EARS

6 *Air is not always the medium through which sound passes.*—

(*a*) This can be illustrated by means of a *string telephone.* Two cocoa tins are each bored with a hole in the base and connected by passing a string through the holes and knotting it at each end. Two children, holding the tins so that the string is taut, should use the telephone. A child speaking into the tin at one end will be heard by a child whose ear is pressed against the open end of the other tin. In this case the sound travels along the string (Fig. 44).

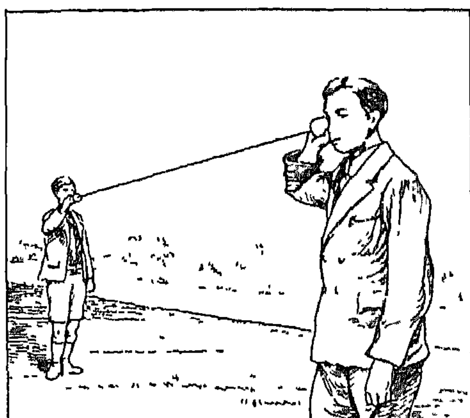


FIG 44 A STRING TELEPHONE

(*b*) Put a watch on one end of a table Press the ear against the table at the other end. The sound will be heard distinctly. In this case the table carried the sound along to the ear. Tell of Indians and natives in other parts of the world who hear the approach of people by listening with their ears close to the ground.

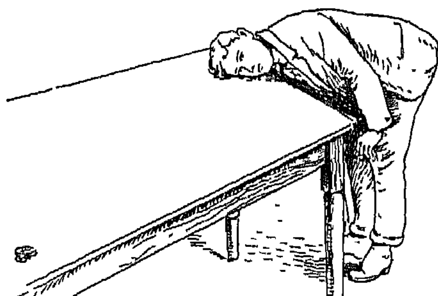


FIG 45. THE SOUND OF WATCH TICKING CAN BE HEARD DISTINCTLY WHEN PLACED ON A TABLE

The difference between a noise and a musical note should be explained. The tuning fork gives a musical note, whereas the screech of a parrot is an example of a noise. The tuning fork shakes or vibrates regularly, but in the case of a noise the vibrations are irregular. The tuning fork vibrates a definite number of times per second. Musical notes vary in pitch, some are low, others high The pitch depends on the number of vibrations per second. The number of vibrations is greater with high-pitched or treble notes than with low or bass notes. Middle C vibrates 256 times per second.

MUSICAL INSTRUMENTS

As an introduction to various musical instruments suggest that the origin of music must be traced to early man's attempts to express his feelings by sounds. Probably the sounds made by early people were war cries; later came folk songs. The music of the folk songs was never written down but must have been taught by singing over and over again until people memorised it. Then it was discovered that musical sounds could be produced by beating objects, and by blowing air through pipes Later still, musical instruments in which strings were used to produce the notes were made, and thus came the lyre, harp, violin, etc. The violin reached a very high standard of perfection about the year A.D 1700. The chief home of the violin was Cremona, a town of Northern Italy. The most famous and best known of these violin masters was Stradivari. Several instruments still exist bearing his name. Guarnari was another celebrated worker.

Percussion instruments.—A toy drum makes a useful illustration of an instrument which vibrates when struck, just as the

tuning fork does What is the drum made of? It is a wooden cylinder with skin or vellum stretched across each end What happens when the drum is struck? It should be possible to feel the vibration of the skin Emphasise the sequence, (1) the drum vibrates, (2) the air vibrates, (3) the ear vibrates

Various kinds of drums may be discussed The kettledrum has a single skin stretched over a hollow metal hemisphere The metal hemisphere is the shape of iron pots used by our great-grandmothers, hence the name kettledrum. The toy drum used in the lesson and the big bass drum produce sounds of no definite musical pitch, but the kettle-drum can be tuned to a definite pitch because the skin is held in place by a ring which can be tightened or loosened by means of screws to vary the pitch. The bass drum is used to mark the time and increase the sound in bands. A tambourine is made on a similar principle. It consists of a single skin stretched over a cylinder which is open at the bottom

A triangle is a different type of percussion instrument It is a steel rod bent into the shape of a triangle with one angle open It is possible to obtain quite cheaply small triangles such as are used in schools in a children's percussion band. The triangle is made to vibrate by striking it with a small steel rod Again note, (*a*) the steel vibrates, (*b*) the air vibrates, (*c*) the ear vibrates. The triangle has a bright silvery tone (Fig 46).

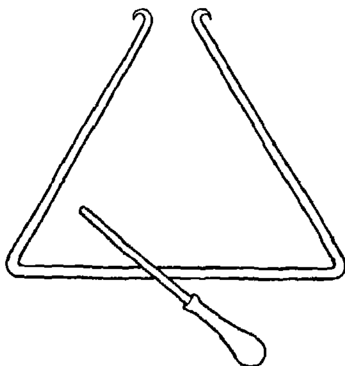


Fig 46 A Triangle

Many instruments are called "stringed" instruments Before studying these the principle should be understood

Experiment

To demonstrate the principle of stringed instruments—Fix two ridges of wood on the top of a cigar box near to the ends. Fasten a wire to a nail at one end of the box Allow the wire to pass over the ridges of wood, hang over the end of the box and support a heavy weight. Pluck the wire and notice the note produced. Notice also that the wire vibrates. If small pellets or strips of paper are put on to the wire they will fall off when the wire vibrates and thus demonstrate this fact more clearly. Replace the weight by a heavier one and again pluck the string Notice how the note produced compares with the first note. Use varying weights until it has been proved that the greater the weight, the higher the note produced This may also be expressed—the greater the tension, i e the force stretching the wire, the higher the note produced. This time we have, (*a*) the wire vibrates, (*b*) the air vibrates, (*c*) the ear vibrates (Fig 47).

The violin is one of the best known of stringed instruments The chief lesson to learn from this instrument is that different notes are produced depending on the lengths of vibrating string as determined by the position of the finger.

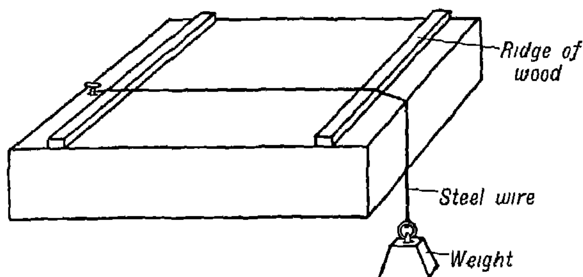


Fig 47 Apparatus used to Demonstrate the Principle of Stringed Instruments

What does the instrument consist of? It is a shell of wood on the upper side of which is a bridge of wood over which are stretched strings made of gut. On each side of the bridge are sound holes The strings are made to vibrate by drawing a bow of horsehair across them The air vibrates against the shell of the violin, thus adding to the beauty of the tone (Fig. 48).

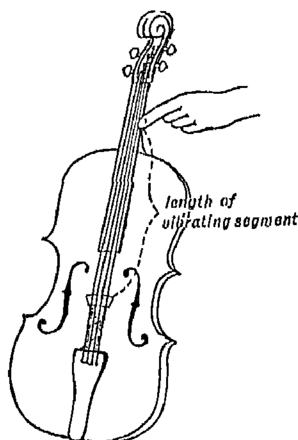


FIG 48 IN INSTRUMENTS OF THE VIOLIN CLASS THE LENGTH OF VIBRATING SEGMENTS CAN BE ADJUSTED BY MEANS OF THE FINGERS, HENCE FEW STRINGS GIVE MANY NOTES. IN A PIANO EACH STRING IS OF FIXED LENGTH AND GIVES ONLY ONE NOTE

What other instruments are similar to the violin? The viola, 'cello and double bass are all made on the same plan, but are larger than the violin. Because of their increased size they produce deeper sounds. Long strings produce low notes and short strings high notes when they vibrate.

The harp is a stringed instrument which has many strings of varying lengths The strings are plucked with the fingers to make them vibrate and produce sweet notes. The guitar, mandoline and zither are similar to the harp. Can the strings of the violin be made to vibrate by any other means? Sometimes the strings are plucked to produce harplike effects

The strings are loosened or tightened when the violinist tunes his instrument. What is the effect of tightening the strings? The pitch of the note will be raised.

A toy piano is a useful illustration when considering the mechanism of a piano. In the toy, metal strips take the place of the wires of the real instrument. These metal strips are made to vibrate by striking with hammers.

Encourage observation by questions.

What do you notice about the length of the strips? Which produce the high notes? Which produce the low notes?

It will be noticed that the metal strips vary in length The long ones produce low notes, and the short ones high notes.

In the real piano there are wires instead of metal strips. The wires are inside the case of the piano stretched over a board called the sounding board The wires are steel and are of different lengths. Which wires produce treble and which bass notes? As in the harp the shortest strings produce the highest notes. When a key of the piano is pressed down a small hammer is raised and strikes the corresponding wire making it vibrate. Each wire is wound round a tuning pin How is the piano tuned? The pitch of the note produced by each wire can be altered by turning the tuning pin, thus tightening or loosening the wire.

A tin whistle affords a good illustration of the fact that a column of air inside a pipe can be made to vibrate, and act as if it were a string Air blown through the mouthpiece hits against a thin edge at an aperture in the side of the tube. By this means the air *in* the tube is thrown into vibration and a musical note is obtained. In the side of the whistle are six holes, and different notes are obtained by placing fingers over the holes. Why? An open hole determines the length of the vibrating air column and this determines the note, just as the length of vibrating string in a stringed instrument determines the note produced What is the sequence



FIG 49 A TIN WHISTLE

of events in this type of instrument? (1) The air inside the pipe vibrates, (2) the air outside the pipe vibrates, (3) the ear vibrates

The tin whistle is a wind instrument, one of a number which depends on vibrating air columns for the sounds. What other instruments belong to this group? The flute, one of the oldest of musical instruments, is a familiar member The cornet and trombone are other examples. The sliding trombone consists of two lengths of brass tube which are bent so as to make it easy to handle One piece of the tube is called the slide and by moving this the player shortens or lengthens the tube In this way the length of the vibrating air column is varied and different notes are produced

A church organ depends on vibrating air columns for its sounds, but the organ pipes do not have holes in the side as does the tin whistle The pipes may be open at both ends or closed at one end

Blow across the end of a piece of glass tubing which is open at both ends. Close one end with the finger and blow again Notice that a higher note is obtained when the tube is open at both ends. Use tubes of various lengths and notice the difference in the notes produced Compare with the stringed instruments. An organ has hundreds of pipes varying in size. Each note is produced by a particular pipe of a definite length. Bellows worked by hand were used to pump air into the pipes but now the blast of air is usually produced by machinery operated by electricity

The effect of varying the length of a vibrating air column may be shown by a simple experiment. Arrange a broom stick so that it rests on the tops of two chairs which are back to back From the stick

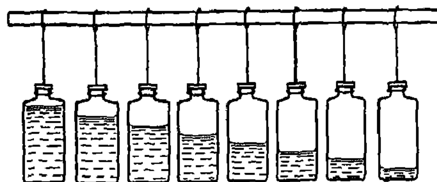


FIG. 50 AN EXPERIMENT WITH BOTTLES AND WATER

suspend eight medicine bottles Pour a little water into the first bottle (to reach about $\frac{1}{9}$th way up the bottle). Pour twice the quantity into the second, and so on until the last has only a short air column (about $\frac{1}{9}$ the length of the bottle). In this way eight air columns of increasing length are available If each of the bottles in turn is struck with a stick the notes of the scale will be made. The lower the air column, i.e., the less water there is in the bottle, the lower the pitch of the note produced.

A mouth organ works differently It is a member of a class of instruments called *reed instruments*, because they have reeds in their mouthpieces. In the mouth organ the reeds are small strips of metal which are thrown into vibration by the breath. There are a series of them in this instrument.

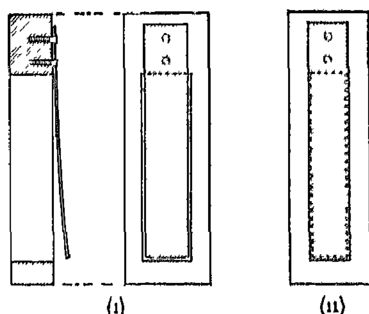


FIG 51 VIBRATING REEDS

(i) Side and Front View of a "Free" Reed as used in a Concertina and "Mouth" Organ (ii) A "Breaking" Reed in which the Reed is larger than the Opening behind it Some Organ Pipes have Reeds of this type

Examine a mouth organ and find the position of the reeds. In this case, (*a*) the reed vibrates, (*b*) the air vibrates, (*c*) the ear vibrates (Fig 51)

A clarinet is a wooden single reed instrument played by holes and keys. A **bassoon** is a wooden double reed instrument; the name means deep sound.

Echoes.—If the school playground exceeds 100 feet in length a lesson on echoes should be given. Stand at one end of the playground and call out a word or stamp on the ground with your feet. The word or sound will be heard as an echo. Why is this? The vibrations of the air reach the building or wall at the other end of the playground and are thrown back or reflected, making the echo. If the length of the playground is only about 100 feet you will probably hear only the final syllable of the word, if longer you will hear the whole word. In other words, an interval must elapse in order that the echo may be clearly distinguished from the original sound. If the playground is long enough, test this fact by making sounds at a distance of (*a*) less than 100 feet from the reflecting wall, (*b*) at about 100 feet distance, (*c*) at distances of more than 100 feet. If the interval which elapses is timed, an idea can be obtained of the rate at which sound travels. The rate is 1,089 feet per second

The gramophone is particularly interesting because it produces *second-hand* music or speech.

The most important part of a gramophone is the sound box in which is a circular mica disc to which is attached the needle that touches the "record" when the machine is working (see Fig. 52). How is a "record" made? The singer or speaker stands in front of the sound box and the sounds produced cause the mica disc to vibrate This movement of the mica disc makes the needle scratch wavy lines on the wax plate as the latter is moved round by the clockwork mechanism. Thus an impression of the singer's voice is obtained on the wax plate.

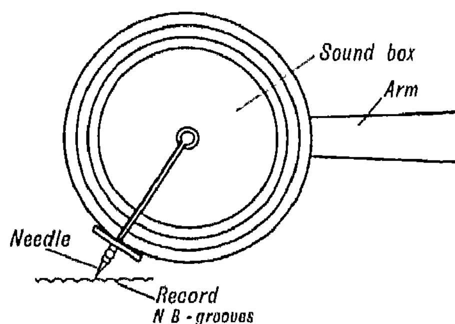


FIG 52. SOUND BOX OF GRAMOPHONE

What happens when the needle is allowed to go over the marks which it has made on the wax disc? The needle follows the wavy lines, thus making the same movements as were made by the recording needle. The mica disc will therefore vibrate in the same way and will make the same sounds as the singer did.

From the wax disc a metal mould is made from which thousands of copies of the record can be made.

Explain that the mechanism is very delicately adjusted to revolve the record regularly on the machine.

LESSONS FOR THE THIRD YEAR'S COURSE OF SCIENCE

ELEMENTARY facts concerning light and simple chemistry form convenient subjects for the third year, but on no account should any geometrical optics be included in the course on light, nor chemical symbols be introduced in the lessons on chemistry.

LIGHT

The course on light might begin with a consideration of the chief sources of light. What is our chief source of light? The sun which we see shining in the sky in the daytime gives us more light than anything else. What is the sun? It is a huge mass of gases which are so hot that, although the sun is millions of miles away (about 93,000,000 miles) it can send light and heat to the earth Stars, too, are similar to the sun in that they are made of white hot gases which give out light Unlike the sun, *they are so far off that they do not* give us much light What is moonlight? It is reflected sunlight. The moon is cool and so gives out no light of its own. It sends back, or reflects the light which it receives from the sun, and this is the light which we see

Nearly all things which give light are very hot. Ask the pupils to suggest things which give light. A lamp, a candle flame, a gas flame, and burning coal are familiar examples A simple gas jet gives a feeble light, but an incandescent mantle makes the light much stronger Why? The mantle contains a substance which glows very brightly when it is heated by the gas flame The incandescent mantle is often called the Welsbach mantle, because it was invented by Dr Carl Auer von Welsbach, of Vienna, in 1886 The well-lighted streets and homes of modern times are very different from the gloominess of a hundred and fifty years ago, when a solitary candle or rushlight was considered sufficient illumination in a room These rushlights were made by dipping dried rushes from marshy ground in boiling fat, or grease. The result resembled a limp taper and was very different from the wax candles of the present day In 1792 a Scotsman, William Murdock, began experimenting to obtain gas from coal By 1807 it was produced in large enough quantities for street lighting The yellow flame of the gas burner was the best means of illumination until the discovery of the incandescent mantle. The use of gas for lighting has lessened somewhat in recent years with the coming of electricity.

Do any cool things give light? The beetle called the glowworm gives a light which is strong enough to show at night-time when the light of the sun is withdrawn. This is one of the few creatures which can give light even though it is cool Cool things which give light are said to be phosphorescent. This word is used because phosphorus is one of the few minerals which give light when cool. If a piece of phosphorus is available the glowing can be shown in a darkened room. Emphasise the care which must be taken in handling phosphorus (hold with forceps) because of burning the hands. Explain that it is kept under water because it fumes in the air and catches fire easily. Mention that bad fish glows in the dark because it contains phosphorus

Why can we see objects in the room, desks, books, blackboard, etc., which are not hot and have no light of their own? They borrow light from the sun and send it to our eyes At night-time we light our

homes by gas or electric light and the objects then borrow light from the lamps to send to our eyes. Thus we learn the fact that *things must send light to our eyes* if we are to see them Why is air invisible? It must be because it does not send light to our eyes.

Why can books be seen in a glass case? The light passes through the glass, reaches the books and is sent back to our eyes. Water behaves in much the same way. Fish can be seen in a glass aquarium because the light passes through both glass and water We say, therefore, that both glass and water are transparent. Things which will not allow light to pass through them are said to be opaque. Ask the pupils for examples of substances which are transparent and others which are opaque and make two lists. It will be found easy to suggest opaque substances, e g. wood, metal, books, walls, etc., but more difficult to think of transparent substances Consider the substances included in the list. Many of the opaque substances will be found to be solids, a few solids, e.g. glass, are transparent. Many liquids are transparent, some are opaque, e g. Indian ink. Is it possible to name a gas which is opaque? Air, coal gas, hydrogen are all gases and are all transparent.

Even if we consider transparent substances it will be found that some allow light to pass through more easily than others Show that glass is more transparent than celluloid, mica, etc Compare frosted glass and clear glass Does light pass through both? Yes Then what is the difference? It is not possible to see objects clearly through frosted glass.

Information concerning the fact that light travels in straight lines may be obtained from *shadow games*.

Shadow Games

1 Pin a sheet of drawing paper on to a drawing board. Fix the board in a vertical position so that it will act as a screen. Use a lamp or candle to provide the light. Put a pencil between the lamp and the screen. A long narrow shadow appears on the screen Repeat, using other objects, e.g. an ink bottle, pencil, book, box, etc. Notice that the result is the same each time, the shadow varying in size and shape according to the object used. (Fig 53).

Why is the shadow formed?

The objects used are opaque to light and so a dark space is formed. This dark space appears as a dark patch or shadow on the screen.

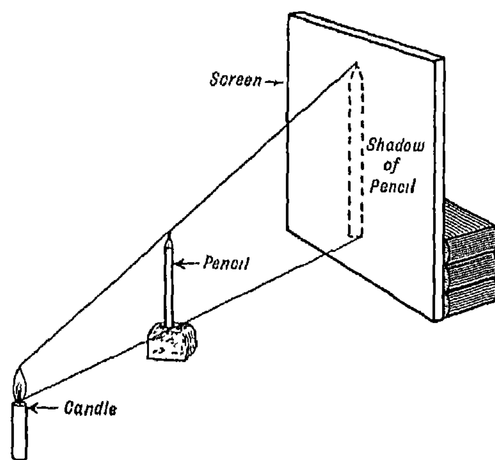


FIG 53. SHADOWS

N B.—Although it may be noticed that some parts of the shadow are lighter than others, it is advisable not to discuss umbra and penumbra, because the proper explanation of this would involve geometrical optics.

2 What information with regard to the shape of an object does its shadow give? Using the lamp and screen again, hold a plate between them—

(*a*) broadside to the light,
(*b*) edgewise to the light.

What is the result? In the first case the shadow is circular in shape, but when the plate is held edgewise to the light the shadow is similar in shape to that obtained when a pencil is held vertically.

Repeat the experiment holding a book in two positions and so show that the book's shadow may be—

(*a*) a broad rectangle,
(*b*) a narrower rectangle.

Thus the shadow of an object may not always be the same shape. Repeat, using other objects held in two or more positions, e g ink bottle, pencil box, etc

Finally, insert a ball between the light and the screen. What is the result in this case? However much the ball is turned about, the shadow cast is always a circle.

Continue this consideration of shadows by discussing what happens when there is a lunar eclipse (eclipse of the moon) A shadow is cast on the moon and this is always a circle or a part of a circle The shadow is that of the earth, and an eclipse occurs when the earth in its movements in space gets in between the sun and the moon Encourage the pupils to think of the moon as corresponding to the screen used in the experiments or shadow games, the earth as the ball and the sun as the light. Remind the pupils that the moon shines by light reflected from the sun, just as we can see the screen because it reflects light thrown by the lamp The shadow cast by the earth is always a circle, thus we know that the earth has the shape of a ball.

The sun casts shadows of objects on to the ground in the daytime Some interesting work in shadows can be carried on out of doors, or even in the classroom if it is a sunny one.

Experiment

Fix a pole vertically in the ground on a sunny day and notice the length and direction of the pole's shadow Mark its position and length on the ground by means of a chalk line. If possible make observations every fifteen or thirty minutes during a morning and afternoon

Answer the following questions —

(*a*) What happens to the direction of the shadow during the time observations are being made?
(*b*) What happens to the length of the shadow in the same period?
(*c*) In what direction does the shadow point at noon? (12 o'clock winter time and 1 o'clock summer time)

Answers —

(*a*) The direction of the shadow changes, being different each time an observation is made
In the early morning the shadow points towards the west, later north-west, at noon north. In the afternoon north-east, finally east
(*b*) The shadow is long in the morning, becomes shorter until noon and in the afternoon lengthens again, i e it is shortest at noon
(*c*) The shadow points to the north at noon Noon is 12 o'clock winter time and 1 o'clock summer time (If carried out in a classroom a knitting needle and sheet of paper can be used) (Fig 54)

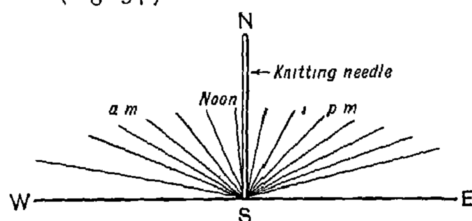


FIG 54 TRACE OF SUN'S SHADOW

N B.—*Summer time.* In Great Britain and many other countries the clock is advanced one hour during the summer The result is that when the sun is highest in the heavens the clocks register 1 0 p.m. in summer and 12 o'clock in winter.

Sundial

The varying direction of the shadow cast by the sun at different times of the day is used in the working of a sundial If there

is a sundial in the school playground or in the neighbourhood it will form an interesting study If not, show a picture of a sundial or make a drawing of the face of one and show the style or gnomon, the shadow of which is cast by the sun.

Notice:—

(*a*) *The earliest and latest hours marked* on the dial, e.g six earliest and five latest.

(*b*) The way in which the hours differ from those marked on a clock face.

(*c*) Whether the sundial is on a wall or horizontal on a pillar.

The pupils might construct rough sundials (Fig. 55). This is possible with very little apparatus. Paste a piece of drawing paper on to a small piece of wood, about

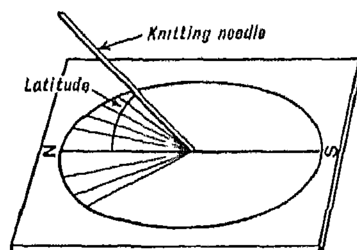


Fig. 55 A Simple Sundial

10 in. square. Draw a circle and draw a diameter of the circle. Mark one end of the diameter north and the other south. Arrange the piece of wood so that this diameter lies along the north-south line as determined in the experiment on shadows. Fix a knitting needle in the centre of the wood inclined towards the north so that it makes an angle with the horizontal equal to the latitude of the place. Notice the position of the shadow of the needle at various hours, e g. 9.0 a.m., 10 0 a.m, 11.0 a m., 1 0 p m, 2 0 p m., 3 0 p.m., 4.0 p m. Each time draw a line on the paper in the direction of the shadow.

Notice that the shadow does not move through the same number of degrees each hour, therefore it would be incorrect to mark the hours at equal intervals, as on the face of a clock.

Experiment

Another experiment may be performed to illustrate the fact that *light travels in straight lines*.

Light a candle and arrange three pieces of cardboard vertically in a line at distances of about six inches from one another (Fig. 56)

If holes are pierced in the three cards the candle can be seen through them only if holes are in a straight line.

Test this:—

(*a*) by piercing holes at different points in each card.

(*b*) by putting all three cards together and piercing a hole through them

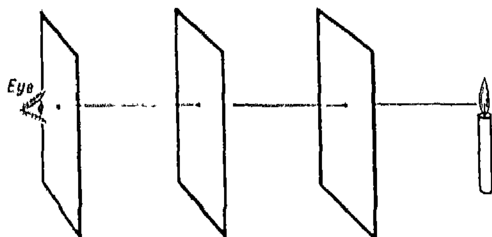


Fig. 56. Light Travels in Straight Lines

If arranged as suggested it will be possible to see the candle flame.

Mirrors

Since light travels in straight lines we cannot see round a corner in the normal way, that is not unless we walk to the corner and look round it.

Ask the pupils to suggest any way by which we can see round a corner before reaching it. This can be done by fixing a *mirror* across the corner.

Why does a mirror enable us to see round a corner?

Try to demonstrate this by using a mirror placed at an angle so that it is possible to

see round the classroom door into the corridor, or round a corner of the school building, by arranging a mirror suitably in the window.

What effect does the mirror have? It alters the direction of the light and sends to our eyes light from objects which are round the corner. Light striking the mirror is sent off again. Why? Because the surface of the mirror is polished and is perfectly smooth.

Make a list of things which can act as mirrors. Bright metal such as aluminium, copper, steel, silver, nickel, etc. Mention that mercury is a metal and is in the liquid state at ordinary temperatures. Glass, polished furniture, floors, undisturbed water are other examples of mirror surfaces Emphasise the smoothness and brightness of all of these mirror substances

What do we see when we look into a mirror? We see a picture or image of ourselves, of things in the room, etc

Experiments

Look into a mirror and answer the following questions —

(*a*) Is the image of the face larger, smaller or the same size as the face?
(*b*) Does it seem to be behind or in front of the mirror?
(*c*) How far behind?
(*d*) Bring the mirror nearer and notice

    (*a*) whether the image moves,
    (*b*) what happens to its size.

(*e*) Raise the right hand to the face and notice which hand seems to be lifted and which side of the face appears to be touched.
(*f*) Write a word on paper and hold it in front of the mirror. Is it easy to read? (Fig. 57.)
(*g*) Write a word backwards on paper and hold in front of the mirror What do you notice?

(N B —To write a word backwards press heavily with pencil on fairly

transparent paper, turn over, and write over the word as seen on the other side.)

(*h*) Write a word in ink, blot it and hold the blotting paper in front of the mirror. What do you notice?

Answers.—

(*a*) The image is the same size as the face.
(*b*) and (*c*). It is behind the mirror, as far behind as the face is in front.
(*d*) As the mirror is moved so the image appears to move, becoming larger when closer to the face, and smaller when farther away.
(*e*) The left hand appears to be raised and to touch the left cheek.
(*f*) The word is not easy to read because it appears to be written backwards.
(*g*) The word appears to be written the correct way
(*h*) The word is easy to read. It appears to be written the right way.

In conclusion emphasise the following facts:—

(*a*) The image appears to be the same size as the object
(*b*) The image appears as far behind as the object is in front of the mirror.
(*c*) The right side of the object appears as the left side of the image; thus allowing the reading of the words on the blotting paper.

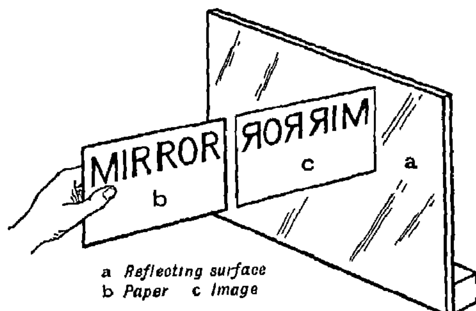


FIG 57 INVERSION OF WRITING AS SEEN IN A MIRROR

Experiments

1. Arrange two mirrors vertically face to face and parallel to each other (Fig. 58). Put a bright object, such as a candle between them. Look over one mirror into the other.

(*a*) How many images of the candle can you see?
(*b*) Are they all the same size?
(*c*) Are they all the same distance from the mirror?

Answers:—
(*a*) There are numerous reflections. Some pupils may count more than others.
(*b*) and (*c*) The images become fainter and farther away until they are too faint to see.

Look between the two mirrors so that you can see into both and notice the numerous images which can be seen in both mirrors. Why are there so many images?

There is repeated reflection of light. First of all the candle is reflected in each mirror. The light is reflected from these images and another pair is made farther away than the first. This is repeated and other images are formed farther and farther away.

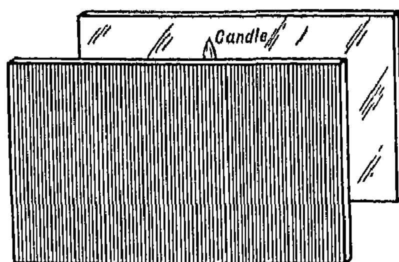


FIG. 58. TWO PARALLEL MIRRORS WITH CANDLE BETWEEN

2. The principle of a *simple periscope* forms another interesting subject of reflection.

First explain the way in which two mirrors can be arranged so that a man in a trench can see what is happening above the ground. Two mirrors (*a*) and (*b*) are arranged at the ends of a tube. Their reflecting surfaces are inclined at 45° to the direction from which the light comes. The two reflecting surfaces are also parallel to one another. Light striking (*a*) is reflected down the tube to (*b*), where it is again reflected to the eye of the observer. A periscope is essential in a submarine so that the surface of the water can be seen when the vessel is submerged. A submarine's periscope has two reflecting mirrors arranged in the same way as the simple one just described. In between the mirrors there are lenses which enable the observer to see objects at a distance. These lenses behave like those in a telescope.

Pupils could demonstrate the arrangement of the mirrors by arranging pairs of mirrors so that an observer near the floor of the room can see objects being moved on the top of a bench or desk (Fig 59).

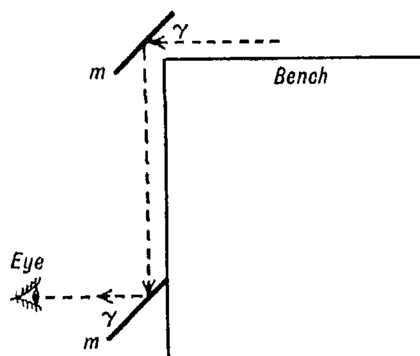


FIG. 59 ARRANGEMENT OF MIRRORS AS IN A SIMPLE PERISCOPE

m = MIRROR
r = REFLECTING SURFACE

Curved Mirrors

These can be demonstrated with a large bright tablespoon.

The outer curved reflecting surface is *convex* (Fig. 60).

Look into the mirror and answer the following questions.

(*a*) Is the image larger or smaller than the face?

(b) Is the image behind or in front of the mirror?
(c) Is the image erect or upside-down?
Move the mirror backwards and forwards
(d) Does the image move?
(e) Does it alter in size?
(f) Does the mirror give a picture of the room?

Answers.—
(a) The image is smaller than the face.
(b) It is behind the mirror.
(c) It is erect
(d) It moves backwards and forwards.
(e) It becomes larger or smaller according to the distance of the face from the mirror, but it is always erect.
(f) The mirror gives a small picture of most of the room

Emphasise the following facts:—

(a) The image is always smaller than the object
(b) It is always behind the mirror.
(c) It is always erect.

Compare the inner surface or *concave mirror.*

Look into a concave mirror held at arm's length and answer these questions.

(a) Is the image larger or smaller than the face?
(b) Is it erect or upside-down?
(c) Can you see as much of the room as in the convex mirror?

Bring the mirror nearer.

(d) What happens to the size of the image?
(e) Is it still upside-down ?

Hold a lighted taper in front of the mirror (about 6 in. from it).

(f) Is the image of the flame erect or upside-down?
(g) Is it larger or smaller than the flame?

Hold the taper very close to the mirror and again ask questions (f) and (g)

Answers —
(a) The image is smaller than the face.
(b) It is upside-down
(c) It is not possible to see as much of the room as in the convex mirror
(d) The image gets larger.
(e) Yes
(f) It is inverted
(g) It is smaller than the flame.

When the taper is held very close the image is erect and is larger than the object.

Emphasise the facts·—

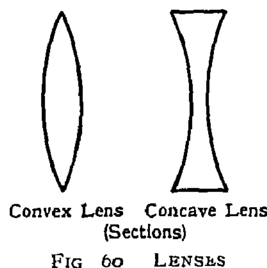
(a) The image is smaller than the object and is upside-down when the object is at a distance
(b) The image is magnified and erect when the object is very close to it.

Ask for suggestions as to the *uses of curved mirrors.*

A convex mirror is used on a motor car so that the driver may see the road behind him for a considerable distance.

A shaving mirror is often concave.

What kind of a mirror will a dentist use? He finds a concave mirror useful because if held close behind the teeth a large erect image is obtained



Convex Lens Concave Lens
(Sections)
FIG 60 LENSES

Another Method of Obtaining Pictures or Images

Remove one end from a small cardboard box—a square box for preference. Paste tissue paper over the end to replace the

cardboard Pierce a hole in the side opposite to the tissue paper. Put a lighted candle a few inches away from the pinhole. Arrange a dark cloth over the head so that no light falls on the tissue paper and look at this end of the box (Fig. 61).

(*a*) What can you see?
(*b*) Is the image erect or inverted?

Answers :—

(*a*) An image of the candle flame is seen on the tissue paper screen.
(*b*) It is inverted

Move the flame varying distances from the pinhole and notice that the image is always inverted.

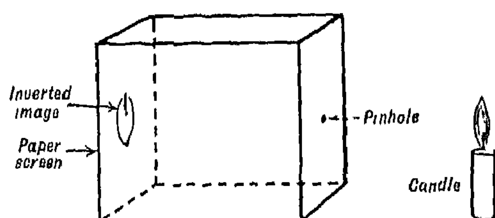


FIG. 61 BOX WITH PINHOLE

If a darkened room is available allow light to pass into the room through one small hole in a blind. Catch the beam of light on a screen of cardboard You will find that a coloured image of the sky and landscape has been caught on the cardboard screen. Notice that the picture is upside-down.

A *pinhole camera* can be made in the same way as the box with the tissue paper screen. A photographic plate or film is arranged in the box at the side opposite to the pinhole. Light entering the pinhole will make a picture on the photographic plate. The latter can be developed and prints of the view obtained. Such pictures may be good, but they are not to be relied on because sufficient light may not enter the pinhole, nor can such a box be made light tight If the hole is made larger the image becomes blurred. This can be shown with the candle and tissue paper screen An ordinary *camera* has the pinhole enlarged and occupied by a lens. This gives much better results The light is allowed to pass through only for a fraction of a second when a snap is taken. The entrance of the light is controlled by a shutter which covers the lens when the camera is not being used. The box camera is therefore similar to the pinhole camera, though much more efficient. More elaborate and expensive cameras work on a similar plan.

What is a lens? It is usually made of glass A convex lens is thicker in the centre than at the edges. A concave lens is thinner in the centre than at the edges.

The eye forms another interesting subject. A lesson can be illustrated by a simple blackboard diagram (Fig. 62). The eye resembles a camera and should be compared with it.

Study a friend's eye and see how much is visible. Actually only a small portion; the front of the eyeball can be seen, the rest is embedded in a bony socket.

What are the parts which are visible?

(*a*) The outer coating or *white* of the eye.
(*b*) The coloured ring, blue, brown, grey, etc., called the *iris*.
(*c*) A dark central part called the *pupil*. This is the opening through which light enters.

The pupil appears black because it is the opening into the dark interior of the eyeball. It may be compared to a small opening in the door of a darkened room. Light enters by such an opening but, on looking in, all is dark.

The iris and pupil are covered by a transparent coating for protection. It is called the *cornea*. Just behind the iris is a convex lens made of a transparent substance which acts like glass. The light passes through the pupil, through the lens and falls on a screen in the dark interior of the eyeball. This screen is called the *retina*. The space between the cornea and the lens is filled with a watery liquid, and that between the

lens and retina with a more jellylike substance.

As in the pinhole box and the camera the image formed on the retina is upside-down. How then do we manage to see things the correct way up? There is a nerve, called the optic nerve, which enters the back of the eyeball and connects the eye with the brain. This nerve flashes messages to the brain of all the images produced on the retina. The brain corrects the impression received by the retina so that we see things the correct way up.

Why do some people need to wear spectacles? The lens in the eye must be of the correct shape and size for the eyeball. Some people's eyeballs get out of shape so that

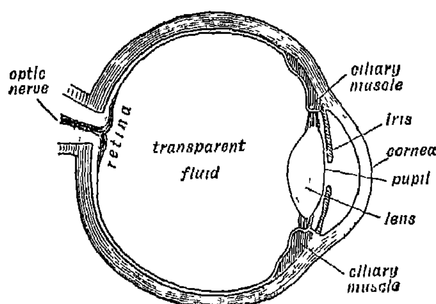


FIG. 62 HORIZONTAL SECTION THROUGH THE HUMAN EYE

the lens is no longer suitable and objects appear blurred. This can be corrected by spectacles. Some people need concave lenses in their spectacles. They cannot see distant objects clearly and are said to be short-sighted. Long-sighted people cannot see near things easily. This defect can be corrected by convex lenses. The explanation of long and short sight is not possible without introducing geometrical optics.

A magnifying glass, such as a reading glass, forms a useful subject for a lesson. Its name implies its use It makes things seem larger. What is it like? It is a convex lens Why does it make things look larger? The light coming from the object passes through the lens and in doing so it is spread out by the lens This makes the object appear larger to our eyes than it really is

Distant objects appear small because they are far away. A *telescope* makes them seem larger, therefore nearer.

In a *toy telescope* there are two lenses Where are they?

(*a*) One of them is at the end which is put to the eye and is called the *eye piece*
(*b*) The object glass is at the other end.

How does it work?

(*a*) The object glass makes a small picture of distant objects.
(*b*) The second lens, the eye piece, magnifies the picture.

The telescope has a sliding tube so that the distance between the two lenses can be regulated This regulation or "focusing" makes the image received by the eye quite clear

A microscope works in a similar way. It has two lenses, but both of them magnify the object.

(*a*) The object glass at the bottom of the microscope magnifies the object placed under it.
(*b*) The eye piece again magnifies the picture.

The two lenses can again be focused to give a clear image. The microscope has two tubes which fit one inside the other. By sliding one tube over the other the lenses can be moved farther apart or nearer together so that a correct focus can be obtained.

Colour forms an interesting subject as a conclusion to the elementary study of light. Sir Isaac Newton discovered that ordinary sunlight is split up into *seven primary colours* when passed through a glass prism This is not easy to carry out unless a dark room and suitable apparatus are available

At this stage it will probably suffice to note that sunlight falling on bevelled glass

(edge of a mirror) throws coloured light on to a piece of paper held in the path of the light leaving the edge of the mirror This can be accomplished easily on a sunny day. Try to distinguish the different colours. Then discuss *a rainbow.*

(*a*) When is a rainbow seen?
(*b*) Does the observer need to stand in any definite position to see the rainbow?

Answers.—
(*a*) A rainbow forms when the sun shines on rain falling as a heavy shower.
Why? The sunlight passes through the rain drops and each drop splits up the light into seven colours.
(*b*) We can see the rainbow only if we stand so that the rain is in front of us and the sun behind us.

What are the primary colours?

They are, in order, red, orange, yellow, green, blue, indigo and violet. The red is seen on the outer edge of the rainbow, and the violet on the inner. The seven primary colours join together to form "white" light. This can be demonstrated by the pupils by means of *Newton's top.*

A circular disc of cardboard is divided up into seven equal sections, and each section is tinted with one of the seven primary colours. A short piece of pencil is pushed through the middle so that the card can be rotated. When the top is spun a dirty white colour will result from the combining of the colours.

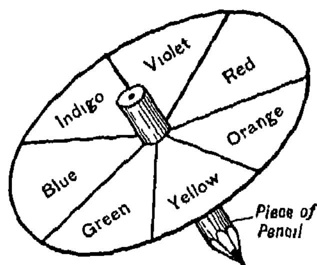


FIG 63 NEWTON'S TOP

Why are some things blue, others green, red, yellow, etc.? This is explained because they reflect only the blue, green or red part of the light and this is what reaches our eyes. If a dark room and a lantern are available, this can be proved. Allow the light from the lantern to fall on a brightly coloured green sheet of cardboard. Catch the light reflected on a white card. It will be green light. Repeat with other colours.

Things looked at through red glass appear red, through blue glass blue, etc. Why? These coloured transparent bodies allow only the red or blue part of the white light to pass through them. They absorb all the other colours.

If a thin piece of red glass is held in the light from a lantern the colour on the screen is red.

CHEMISTRY

The part of the year's work which deals with chemistry should be concerned as far as possible with common processes which occur almost daily.

The changes which take place in a *coal fire* form a convenient subject to take first. What is coal and how was it made?

This can form the subject of an interesting lesson. Millions of years ago there were great forests full of trees very different from those which grow in the forests to-day. They resembled the horsetails and reeds which are small plants growing in swampy districts nowadays. These ancient trees were like giant horsetails and they, too, grew in swampy districts. When they died they fell into the mud and water in which they were growing and there they did not decay as quickly as they would have done in the open air. As time went on they were covered with silt, mud, sand, etc. Thus buried, these ancient trees were pressed upon very heavily by the silt, etc., covering them. Gradually changes took place, the wood lost many gaseous substances, and finally a hard, black substance which we call coal was formed. The sand and silt covering the coal

had by this time been changed into hard rock, so that the coal is often found deep down under the surface of the ground.

How do we know this? Very often impressions of leaves are found on the coal, perfect pictures of the leaves of these ancient trees. The leaves themselves have long since rotted, but their impression was made in the coal before the latter became hard, and so it has been preserved These impressions are called *fossils.* Sometimes whole tree trunks are found turned into coal or into stone (usually a kind of shale) enclosed in the coal, i e, fossilised Coal is sometimes found near the surface of the ground either because the rocks which covered it have been worn away or because the land has been raised higher than it was in the days when the coal forests were growing No doubt the first coal used was found at the surface of the ground. Then man, finding the importance of this fuel, began to dig into the ground for more, and so coal mining began.

One of the earliest records of the use of coal was made early in the fifteenth century by an Italian who later became Pope Pius II. He visited England and Scotland and on his return told that the people of those countries used as fuel a sulphurous stone which they dug from the ground Coal mining did not become of national importance until the eighteenth century, when the use of machinery began a new era

Emphasise the importance of coal for use in our homes for fires, in factories, for making gas, for making electricity, for raising steam to drive locomotives, etc An instructive list could be made of the uses of coal as fuel

Consider various methods of heating In the British Isles before coal became widely used wood and peat were the chief fuels used and these were burnt in open grates. Later the open coal fire became the chief means of heating. To-day the coal fire is still a very important way of heating in private houses but gas and electricity are becoming more and more important. Coal is generally the fuel used for making gas to be burnt in gas fires or for making electricity. These form a more economical way of using the coal than is possible in a fire, from which some heat must escape up the chimney Refer to present-day methods of heating large buildings by hot water pipes or by steam

Chemically, coal consists of a black substance called *carbon* and is similar to charcoal. Charcoal is obtained by the partial burning of wood.

Is any coal being made to-day? In swampy places, such as the boggy parts of heather moors, the plants do not decay quickly when they die because of the presence of so much moisture. Therefore a tough, brownish mass of partly decayed material is formed. If cut into blocks and allowed to dry this forms a useful fuel which is called *peat.* If not used the peat would gradually change and become harder. After a very long period of time it would turn into coal. Now let us consider as the subject of another lesson *the chemical changes which take place in a coal fire.*

One of the first essentials for the burning of coal in a fire is air. If air is excluded the coal will not burn. If a fire is badly laid so that there is no draught the fuel will not light easily. The air consists partly of a gas called oxygen. This gas joins or combines with substances when they burn. In fact, burning is a process of combination with the oxygen of the air In the coal fire the oxygen of the air combines with the carbon to make gases which go up the chimney. The air enters at the bottom of the grate so that if a fire is to burn well air must be allowed to get in easily. When the oxygen combines with the carbon so much heat is formed that a flame is seen and the heat warms the room.

What is left in the grate when the fire dies out? The ash left is unburnable mineral matter which is present in the coal If cinders remain they are only partly burnt coal and can be used again.

Similarly, when paper and wood burn they combine with atmospheric oxygen to form

gases which disappear up the chimney. They, too, leave an ashy residue Paper catches fire more easily than coal. If a piece of paper is partly burnt, the flame then extinguished, and the edges examined, they will be brown or black in colour. We say that they are charred. This word is related to charcoal, and suggests that paper contains carbon Wood behaves similarly, although it catches fire less easily than paper, but more easily than coal It, too, chars, i e., it contains carbon.

Emphasise the fact that coal was originally wood, and has lost some of the inflammable material which allows the wood to catch fire easily. Mention, also, that paper is very often made from wood.

The changes which take place *when a candle burns* form the subject of one or two lessons.

Examine a candle and notice what it is made of.

(*a*) The wax.
(*b*) The wick.

Light the candle and watch it burn for several minutes What happens?

(*a*) First of all the wick is lighted.
(*b*) The flame heats the wax and melts a little of it.
(*c*) After the wax has begun to melt the flame becomes brighter

What happens to the wick and wax?

Eventually they both burn away. Evidently both are inflammable

Experiment

1. *To heat candle wax.* Melt a few pieces of candle wax in a crucible or tin lid. Notice the fumes which come from the wax when it is melted. Hold a lighted match over the fumes. They catch fire and the wax burns.

This can be performed a second way. Fit a test tube with a cork and short glass tube drawn out to a jet (Fig. 64). Put a little wax into the test tube. Melt the wax gently in the bunsen flame. A whitish gas is given off and can be lighted at the jet.

Thus it can be concluded that when the candle burns it is the wax, melted and turned into a gas, which is burning.

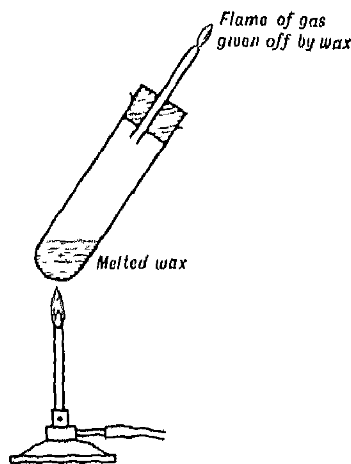


FIG. 64. HEATING CANDLE WAX

What part does the wick play?

Dip an end of a piece of dry wick such as is used in an oil lamp into red ink or coloured water. What happens? The liquid rises up the wick. This happens in an oil lamp.

In a candle the flame heats the wax, melts it, the liquid rises up the wick, where it is turned into a gas and catches fire.

What substances are formed when a candle burns?

2. Hold a piece of glass tubing, or a porcelain dish, in the candle flame.

Notice the black deposit which forms on the tube or dish. The black substance is carbon or soot.

Therefore the candle wax must contain *carbon* just as coal does. What happens when the candle burns?

Just as happens when the coal burns the oxygen of the air combines with the carbon to make an invisible gas. This gas is called carbon dioxide

3. Hold a dry glass (beaker, jam jar, etc.) over a candle flame. What happens?

Notice that a mist forms on the inside of the glass Touch it and it will be found to be moist. It can be proved to be water

Therefore water is formed when a candle burns.

How is this water formed?

Candle wax when melted gives off gases, some of which contain hydrogen Hydrogen is a light inflammable gas used for filling balloons and airships. The oxygen of the air combines with this hydrogen which is in the candle wax and water is formed.

It is possible with very simple apparatus to *prove that water consists of two gases.*

4. If a current of electricity is passed through the water two gases are formed because the electricity splits up, or decomposes, the water.

Partly fill a large trough with water. Add a few drops of sulphuric acid Pure water does not allow an electric current to pass through it easily, but if acidulated the conductivity is considerably improved. An accumulator, or dry battery, is necessary to supply the current Attach wires to the battery but do not put the other ends into the water or the result will be poor. Some other substance must be used which is not copper, attached to the wires and inserted in the water Carbon is suitable and rods of it can be obtained from old torch batteries. Make a notch near one end of two such rods and attach the wires by twisting them round the notches. These rods are called the electrodes When they are dipped in the water bubbles of gas will be seen rising from the electrodes. Fill two test tubes with water and invert them over the electrodes The bubbles of gas will rise to the top of the test tubes, gradually push out the water and fill the tubes. Notice that gas collects in one tube more quickly than in the other. After a time it will be noticed that one tube contains double the volume of gas present in the other. When a sufficient quantity of the gases has collected the tubes can be removed (one at a time) and the contents tested with a lighted taper The gas in one tube is inflammable and burns with a blue flame It is hydrogen The other does not burn, but if tested with a glowing splint the splint will rekindle.

N B.—To remove tube put thumb over the open end before removing it from the water.

Which gas is given off in greater amount? The hydrogen is given off in greater quantity than the oxygen.

Thus it may be concluded that water is composed of two gases called hydrogen and oxygen, twice as much hydrogen as oxygen.

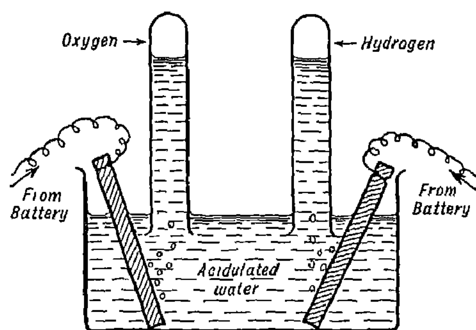


FIG 65 TO SHOW THAT WATER CONSISTS OF OXYGEN AND HYDROGEN

5 It can be shown very simply that *part of the air is used when a candle burns.*

Float a small piece of candle on a cork in a glass trough or other large vessel. Light the candle and cover it with a large inverted glass jam jar. Notice what happens.

The candle burns for a few minutes, flickers and goes out. What has happened to the water? It has risen in the jar. Why?

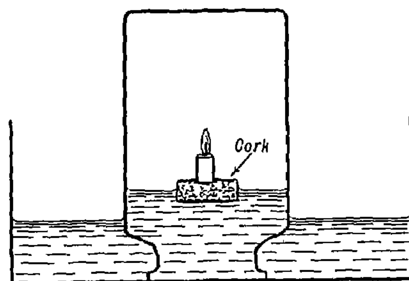


FIG 66 BURNING A CANDLE UNDER A JAM JAR

Some of the air must have been used up by the burning of the candle.

Repeat the experiment. The result is the same. However many times the experiment is performed it will always be found that the candle burns for a short time, the water rises and the flame goes out.

We must conclude that (*a*) part of the air is used in the burning; (*b*) only this part can be used when a substance burns, and when used up the flame goes out.

The word *combustion* is used to describe burning.

6. The *rusting of iron* forms a useful and most instructive lesson. Moisten the inside of a gas jar or jam jar and sprinkle some iron filings inside so as to cover the bottom and sides. Invert the jar in water in a trough or other large vessel. Leave for a few days.

When examined the filings will have rusted and the water will have risen in the jar. Measure the distance it has risen. You will find it has ascended one-fifth of the way up the jar. Insert a glass plate or piece of glass under the mouth of the jar and remove the jar from the water. The air left in the jar can be tested by inserting a lighted taper. What happens? The taper goes out. The four-fifths of the air not used up when the iron rusted does not allow burning to go on in it.

What may we conclude?

(*a*) Air is used up when iron rusts
(*b*) The air left will not support combustion.
(*c*) Therefore rusting is similar to burning, it is, in fact, combustion without a flame. We may call it slow combustion.
(*d*) When iron rusts the iron combines with one-fifth of the air, namely the part which allows burning. This part of the air is called *oxygen*.

The process of combining with oxygen is called oxidation. When iron rusts we say it is oxidised.

What are the conditions necessary for rusting?

(*a*) Water is necessary.

If iron filings are kept perfectly dry they will not rust. Enclose some filings in a bottle or jar containing a small quantity of calcium chloride, a substance which absorbs water and therefore keeps the air dry. Examine the filings after a few days and they will be found to be free from rust. Compare with a few filings left exposed to the air. They will probably have rusted. Therefore—water is necessary for the rusting of iron

(*b*) Oxygen is necessary for the rusting of iron.

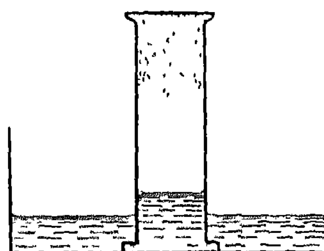


FIG 67. AIR IS USED WHEN IRON RUSTS

Boil some water for several minutes to remove any air contained in it (Water contains dissolved air.) Put some filings into a bottle. Fill it to the brim with the boiled water and cork tightly. Examine after a few days. The filings have not rusted. Conclusion: Oxygen is necessary for the rusting of iron.

Breathing is an oxidising process. Oxygen breathed in combines with carbon in food and so carbon dioxide is formed and is breathed out. During this process heat stored in the food is set free to be used in the human body.

What is the gas left when a candle burns and iron rusts? It is four-fifths of the total volume of the air, and is a substance not used in combustion It is called *nitrogen*. *Nitrogen* may appear unimportant since it seems to be inactive. Actually it is a most important substance All plants, animals and human beings require nitrogen in their food if they are to be healthy. None can live without it. Plants obtain it from

mineral salts which are present in the soil. Most animals obtain their nitrogen by eating vegetable food. Human beings obtain it from lean meat, cheese, fish, milk, butter and vegetables.

Summary

1 Air is necessary for combustion.

2 When substances burn they combine with oxygen, the active part of the air.

3. Combustion may be rapid as when it is accompanied by a flame, e g , the burning of a candle, coal, etc , or slow when there is no flame, e g., the rusting of iron, and breathing.

4. The inactive part of the air is called nitrogen. It occupies four-fifths of the total volume.

The active part, oxygen, occupies only one-fifth.

The properties of water

Further lessons may be given on the properties of water particularly its action as a *solvent*

Experiments

1. Add a little salt to some water contained in a test tube. Shake the contents of the tube. What happens? The salt disappears. Yet the water tastes of salt We say the salt has *dissolved* in the water. Water appears to be continuous but is really full of little spaces or pores, and into these spaces dissolved substances go.

The water is called the *solvent* and the salt which dissolves in it the *solute*. Ask for suggestions, and make a list of substances which dissolve in water, e g., sugar, soda, soap, alum, etc.

2. Make a solution of salt. Pour some of it into a porcelain dish and boil it to dryness.

The water boils away but the salt remains Taste it to make sure that it is salt.

3. Make solutions of copper sulphate, alum, potassium nitrate Dissolve as much solid as possible in the amount of water used. Pour the solutions into saucers and leave exposed to the air for several days. After a few days some of the water will have evaporated. Pieces of the solid which was dissolved in the water will be found at the bottom of the liquid which still remains in the saucers. Examine these solids and notice their shape We call them *crystals*. Notice that the crystals formed in the copper sulphate solution are different in shape from the alum crystals.

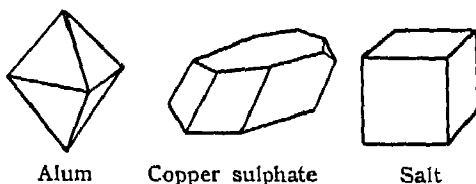


FIG 68. CRYSTALS

Crystals contain water.

4. Heat some crystals of washing soda in a test tube Notice the liquid which forms inside the top of the tube. The liquid is water A powder is left in the tube

5. Heat some copper sulphate crystals The result is the same, but the powder left in the bottom of the tube is white Add a few drops of water to this white powder and the substance turns blue again, but crystals do not form unless the solid is dissolved in water and the solution again allowed to evaporate

6 Leave some washing soda crystals on a piece of paper exposed to the air for several days. On examination it will be found that the crystals have disappeared and there is a white powder left. Washing soda is an example of a substance whose crystals easily lose their water.

7. Melt some sulphur in a crucible. Allow it to cool. After a few minutes a crust will have formed over the liquid. Pierce this with a needle Underneath will be found long needle-shaped crystals. These crystals have formed *without water*.

The effect of heat on various common substances

This part of the work can be begun by consideration of the action of heat on wood.

1. Put a few chips of wood into a crucible or on a tin lid. Cover with sand and heat strongly with a bunsen flame

Notice that smoke is given off. This smoke contains an inflammable gas which may be lighted as it escapes through the sand. After 15–20 minutes' heating allow to cool, remove the sand and examine the residue. It has charred and is now charcoal.

If the chips of wood are weighed before heating and the charcoal weighed when cool a loss will be noted. This loss is the weight of the gases which have escaped.

2. Now heat the charcoal in the crucible or on the tin lid without the covering of sand.

Very soon the charcoal burns away leaving only a white ash.

Therefore when wood is burnt in the air, e g., in a fire, gases are given off, the carbon (charcoal) burns away and only a fine ash of material which will not burn remains.

3. Heat wood chips or sawdust in a glass tube.

Notice.—
(*a*) that fumes are given off;
(*b*) a liquid resembling water forms inside the upper part of the tube;
(*c*) a black residue, charcoal, forms in the tube.

If a taper is held near the mouth of the tube the vapour will catch fire, or, better still, if the test tube is fitted with a cork and glass tube, the latter drawn out to form a jet, the gas can be ignited at the jet.

Wood charcoal is made on a large scale by heating wood in much the same way as it was heated in the crucible when covered with sand. Long branches of wood are piled into a heap leaving a hole in the centre The heap is covered with turf and the whole mass of wood ignited. The wood smoulders, some burns away, but a great proportion of it is converted into charcoal.

Charcoal is very porous, i.e., is full of small holes. It will absorb impurities, and is therefore used in the ventilators of sewers to absorb sewer gas and in filters used for purifying drinking water.

4. *Compare the effects of heat on coal.* Put a few pieces of coal on to a tin lid and heat with a bunsen flame. Notice that the coal softens, and a tarry substance forms. Then a gas is given off. This may be lighted. Gradually the coal glows and burns away and only ash remains.

5. Put a few pieces of coal into the bowl of a churchwarden clay pipe. Cover the mouth of the bowl with clay and heat strongly in a fire or with the bunsen flame. After a time a gas will escape from the end of the stem and may be lighted.

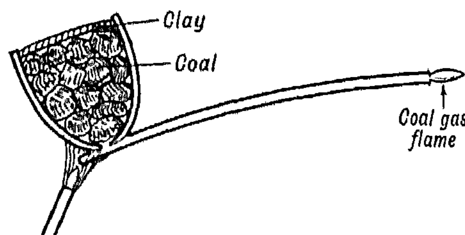


FIG 69 HEATING COAL IN A CLAY PIPE

When no more gas is given off allow the pipe to cool, remove the clay and the residue will be found to be coke. A tarry material may also be found in the bottom of the bowl, or in the stem of the pipe.

Explain simply that coal is heated in enormous quantities at the gas works, and that gas, like the gas which burned at the end of the pipe stem, is made Coke is left and a substance called coal tar is also obtained. Many kinds of materials, e g disinfectants, dyes, pitch, etc., are obtained from coal tar

6. *Effect of heat on sugar* Heat a little sugar in a test tube.

Notice that it melts, turns yellow, brown and finally black A clear liquid forms on

the sides of the tube. This is water. A gas is given off from the mouth of the tube

Flour behaves similarly when heated. Notice in each case the smell of "burning." "Burnt" bread and "burnt" meat are the result of similar action. Wood, coal, sugar and flour are all substances of vegetable origin All give off gases and leave a black residue, carbon (charcoal). In the case of coal the coke is the residue of carbon.

If heated in the air the carbon formed in each case burns away, leaving a small quantity of ash When carbon burns in air it joins with the active part of the air, oxygen, to form another gas called carbon dioxide This gas is invisible and has no smell; how then can we be sure that it is being formed?

7. *To burn carbon in air and test the gas made.* Light a candle and lower it into a gas jar or jam jar This can be done by twisting wire round the candle. When the flame goes out remove the candle Pour into the jar a little lime water and shake the jar, previously covering its mouth with a glass plate.

The lime water, which was clear at first, becomes cloudy or milky in appearance. This is caused by the presence of the gas which we call carbon dioxide.

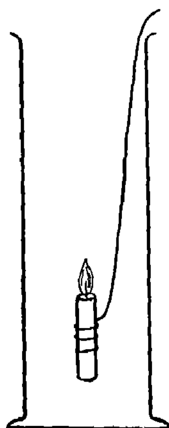


FIG 70 BURNING A CANDLE IN A GLASS VESSEL

The same result may be obtained by burning wood in the jar.

8 *To find the effect of heat on powdered limestone.* Powder some limestone, put it into a crucible and heat strongly in a bunsen flame for about an hour. (If available, a blowpipe flame gives a quicker result) Allow to cool.

If a balance is available the crucible and contents may be weighed before and after the experiment when a loss in weight will be found after heating. Some gas has been lost during the heating.

9 Add a few drops of water (*a*) to limestone, (*b*) to the product left after heating.

Result :—

(*a*) nothing of note occurs;

(*b*) the powder swells, becomes so hot that steam rises from it and finally breaks up into a fine white powder.

Therefore we may conclude that a different substance is left after heating.

The new substance is called *quick lime.*

The fine powder formed by adding a few drops of water to the quick lime is called *slaked lime*

10. If the powdered limestone is heated in a strong test tube the tube can be fitted with a cork and a bent glass tube. Allow the tube to dip into lime water in another test tube When the limestone has been heated for some time a little gas will be given off and will turn the lime water milky.

This is the same result as was obtained when the candle was burnt in air. Therefore we may conclude that when limestone is heated a gas, carbon dioxide, is given off, and lime is made

What is the use of lime? In many parts of the country we may see lime kilns These are a kind of furnace in which limestone is heated very strongly by means of burning coal or coke. The process is called "burning" limestone, but the substance is not burnt, it is heated just as it is in a crucible, carbon dioxide is given off and lime left.

If a little slaked lime is shaken with a large quantity of water the slaked lime dissolves. The liquid so formed is called lime water and may be used to test for the presence of carbon dioxide, as in the experiment just described. If the slaked lime does not dissolve entirely the liquid should be filtered through blotting paper before being used. Lime water is sometimes used as a medicine, e g as a relief for "heartburn," a form of indigestion.

Slaked lime is also used for making whitewash. It is added to heavy soil to lighten it, or to soil where there is much decaying

plant material, to sweeten the soil. Therefore lime is a useful substance to the farmer

The builder, too, uses lime which he slakes and mixes with sand and water to make *mortar*.

Cement is made by burning a mixture of limestone and clay and powdering the substance which is left.

Is carbon dioxide, the gas which escapes when limestone is burnt, useful? If the gas is caught and dissolved in water, aerated water is made. Great quantities of the gas are made to dissolve in the water and the water put into bottles. When the stopper is removed from the bottle the liquid fizzes, or, to use a more scientific word, effervesces. If a little soda water is added to lime water the latter turns milky because of the presence of carbon dioxide in the soda water.

Carbon dioxide is also used for extinguishing a fire. Fire extinguishers usually contain substances which make carbon dioxide. When the extinguisher is used as described in the directions, water and carbon dioxide are both poured on to the flames. Soda water is therefore very effective in extinguishing flames, more effective than ordinary water.

11. *To show that we breathe out carbon dioxide.*

Blow through a short piece of glass tubing or through a straw into lime water in a small glass vessel, e g test tube or beaker.

Notice that the lime water very quickly becomes cloudy.

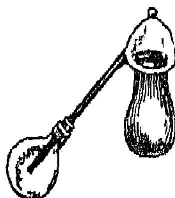
Evidently we breathe out carbon dioxide.

Breathing is really slow burning or combustion. We breathe in the active part of the air, oxygen. Most of the food we eat contains carbon. The oxygen we breathe combines with the carbon in the food and makes carbon dioxide This is slow combustion, and in this respect compares with the rusting of iron. Nevertheless, this slow combustion causes some heat to be given off into our bodies, and so food gives us warmth.

Why does lime water turn milky when carbon dioxide is added to it?

Lime water is lime dissolved in water. Limestone will not dissolve in water, i.e it is insoluble. When carbon dioxide enters lime water the gas again combines with the lime and makes particles of limestone. Since these will not dissolve in the water they make it cloudy.

E. ATKINSON



NOTABLE PEOPLE
AND
NOTABLE DAYS



From the painting by Puvis de Chavannes.] [*Photo* . *W. F Mansell*

THE CHILDHOOD OF ST. GENEVIÈVE
(*See page* 480.)

NOTABLE SAINTS

(St George, Vol I, page 214, and Vol. II., page 245, St. Geneviève, Vol. III, page 119; St. Benedict, Vol. III., page 120; St Francis, Vol. IV., page 34, St. Joan of Arc, Vol. IV., page 57, St Ignatius of Loyola, Vol IV., page 128.)

Saint Andrew, November 30

ST ANDREW, the patron saint of Scotland, was one of the twelve apostles, so that he lived during the first century of the Christian era A few facts concerning his life are given in the Bible, but the other stories told about him were written long after he died, so it is not possible to say how true they are. We know that he and his brother, Simon Peter, were fishermen who belonged to Bethsaida, a village on the Lake of Galilee. At first Andrew was a disciple of John the Baptist. As they were walking along one day they saw Jesus, and John the Baptist said, "Behold the Lamb of God." Immediately Andrew followed Jesus and he brought to Him his brother, Simon Peter, also.

Some time afterwards, Andrew and his brother were fishing when Jesus passed by. He said to them, "Follow me and I will make you fishers of men," and at once they left their nets and followed Him. So Andrew and Peter were the first two disciples who were called to follow Jesus, and they went with Him everywhere and heard Him teach the people and saw the miracles that He did

After Jesus' death and resurrection, Andrew travelled about in Asia Minor, and it is said that by his teaching and miracles he converted many souls to Christ. We do not know much of the work that Andrew did, although many stories are told about him. He is said to have taught the Gospel in Russia and so became the patron saint of Russia.

About the year A D. 70 he was teaching in Patras, the chief seaport on the western coast of Greece, and we are told that the governor of the town, who did not believe in Jesus, had Andrew arrested and ordered him to sacrifice to the gods. Andrew, of course, refused to do this and he was put into prison. At his trial St. Andrew rebuked the judge for his impiety, which so enraged him that he ordered St. Andrew to be crucified. On November 30, A D 70, he died on a cross which was shaped like an × and since that time the cross shaped like an × has been known as St Andrew's Cross.

It was about the middle of the eighth century that St. Andrew became the patron saint of Scotland. The story is told that his remains were taken from Patras to Constantinople and then carried by Regulus, the bishop of Patras, under heavenly guidance, to the place in Scotland where the city of St Andrews now stands There is a story, too, that St Andrew's cross appeared in the clouds to Achaius, king of Scotland, and Hungas, king of the Picts, the night before a battle with Athelstan. They won the victory and went barefoot to the church of St. Andrew, where they vowed to take his cross as the national emblem of Scotland

St. Andrew's flag shows a white × on a blue ground At the beginning of the eighteenth century the crowns of England and Scotland were united, and the × of St Andrew was added to the + of St George, thus forming the first union flag of Great Britain

By the union of England and Scotland as Great Britain the two parliaments were united, and there was soon greater friendship between the two countries than there had

ever been before. Scotland is now North Britain and England is South Britain. The meeting of the first British parliament was most imposing Queen Anne, in splendid robes, made a speech of welcome, and each Scottish lord was led to his place by two English lords.

(Patras is the chief centre for the export of currants)

above the world and look always to heaven. She was greatly loved by many poor people for the help and sympathy that she gave them.

Cecilia was brought up as a Christian, at a time when the Christians were being terribly persecuted. She was married to a young noble Roman called Valerian, but he was a pagan, and Cecilia wished him to learn



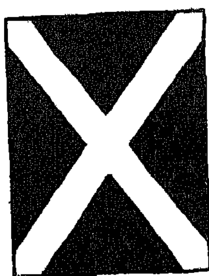
SECOND GREAT SEAL OF ANNE, 1707, COMMEMORATING THE UNION WITH SCOTLAND. (REVERSE)

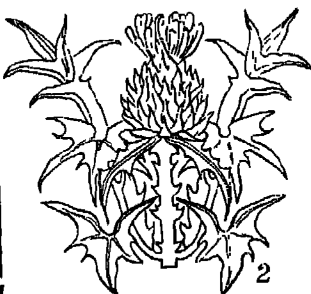
Saint Cecilia, November 22

St. Cecilia is the patron saint of music and of the blind. She was born of rich parents in Rome in the second century, and she grew up into a graceful and beautiful girl. It is said that the name, Cecilia, means "Heaven's Lily," and it was a name that suited her, for she seemed to lift her heart

about the Christian faith He was quite eager to be taught, and Cecilia told him to go along the Appian Way, the great high-road that led out of Rome, until he should meet some poor people and that he was to say to them, "Cecilia bids you show me the way that I may find the old man, Urban the Good." Valerian carried out the instructions Cecilia had given him, he met the poor people

DRAWINGS FOR ST. ANDREW'S DAY

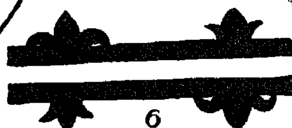














1 St Andrew's Cross 2 Outline Drawing of the Thistle 3 Stencil Design of the Thistle 4. Decorative Design of the Thistle 5. Stencil Design of the Lion, Emblem of Scotland 6. Drawing of the Treasure Border 7 Design of the Arms of Scotland

and was taken down an opening in the ground which was the entrance to the catacombs. It was a strange place underground, with many miles of dark passages, where the Christians hid themselves from the Roman soldiers, where they worshipped Christ and where, too, they were buried. Urban the Good taught Valerian the Christian faith and then baptised him. Legend tells us that on his return to Cecilia an angel bent over them and placed on their heads crowns of lilies and roses. Valerian's brother came in to greet them, and though he could not see the angel's flowers he was astonished to smell their scent and said, "I see no flowers, and yet the sweet scent of roses makes my heart glad." Valerian and Cecilia took their brother to be taught by Urban the Good and he, too, became a Christian.

For some time they lived in great happiness Cecilia could sing her hymns of praise so beautifully that the story was told of an angel being so charmed with her singing that he left heaven for a time to visit the saint. She loved music, and besides having an angelic voice, she could play exquisitely. Thus she came to be regarded later as the patron saint of music. At last Valerian and his brother were seized and ordered to deny their faith. This they refused to do and so they suffered martyrdom, and Cecilia was left alone. At last Cecilia was brought before the Roman governor. "What sort of woman art thou and what is thy name?" he demanded roughly.

"I am a Roman lady," she replied, "my name is Cecilia, but my noblest name is Christian."

She was ordered to die by the sword and the legend tells us that the executioner, after striking one blow, found himself unable to complete his task. Though three strokes were made to strike off her head she did not die at once, but lived for three days longer. In Rome to-day there is a grand church built over the spot where Cecilia's house once stood. Under the altar can be seen a beautiful white marble figure of St Cecilia. She lies on her side with her delicate hands lightly placed near together, and wearing a simple dress which lies in graceful folds, her face is turned downwards, and the mark of the sword can be seen on her slender neck She was martyred about A.D 176. To-day, great crowds of people continue to follow the Appian Way to visit the catacombs, and to visit the church in Rome where lies the beautiful marble figure of St Cecilia.

Many poems have been written about her and many pictures of her have been painted, usually showing St. Cecilia playing an organ There is one painted by our famous English painter Sir Joshua Reynolds He shows Cecilia with her beautiful hands touching the keys of an ancient organ, the pipes of which are partly hidden by cloud, and two charming angelic little figures are seen singing from an open book held between them The English poet Dryden wrote a famous *Ode to St. Cecilia's Day* It is rather difficult for you to understand but at least you will know the meaning of the last line.

" At last divine Cecilia came,
Inventress of the vocal frame;
The sweet enthusiast from her sacred store,
Enlarg'd the former narrow bounds
And added length to solemn sounds,
With nature's mother-wit, and arts unknown before.
Let old Timotheus yield the prize,
Or both divide the crown;
He rais'd a mortal to the skies;
She drew an angel down "

Saint Alban, June 22

The story of St. Alban was written for us long ago by Gildas, a Saxon writer, and also by Bede, a famous monk of the seventh century. It is one of the many striking stories of brave and patient suffering for the Christian faith. Alban lived in Britain during the time that the Romans ruled the land. He was a Roman officer, and his home was at Verulam in the county now known as Hertfordshire. At that time the emperor



From the painting by Sir Joshua Reynolds] [*Photo Braun*

SAINT CECILIA

Diocletian had decided to put an end to the Christian religion, and all who believed in it were fiercely persecuted. One day there came to the door of Alban's house a Christian priest who was fleeing from the Roman soldiers. Alban was a kind-hearted man and took the priest into his house and hid him. From this priest Alban learned about Christ, and in spite of the threats of the emperor against all Christians, he became a Christian himself. Someone discovered that Alban had long been hiding a Christian, and soldiers were sent to his house to find the priest. Alban made up his mind not to give up his friend to the soldiers.

"They have tracked the deer to his hiding place," he said, "but they shall not lap his blood from my floor."

Hastily he persuaded the old priest to change clothes with him and make his escape. Alban came out dressed in the priest's cloak, and the soldiers, supposing him to be the man for whom they were in search, took him before the judge. The mistake was then found out. The judge was very angry at the escape of the priest and declared that Alban ought to die for helping him.

"But," said the judge, "I will spare your life if you will sacrifice to the Roman gods."

It was a striking scene. The judge was sitting with the altar of sacrifice before him, the statue of the emperor and the images of the gods were solemnly brought in, the incense and the wine were placed ready to use in worship. The judge urged Alban to clear himself of his crime against the State by sprinkling incense on the altar before the images of the emperor and the gods. But Alban refused to sacrifice to the Roman gods, saying, "I am a Christian, and I worship and adore the true and living God, Who created all things." Then the judge ordered him to be beaten. He bore the torture patiently and, the old record says, "rather joyfully, for our Lord's sake." He was then led out to be beheaded on a hill top which was then covered with wild flowers—daisies, buttercups and the like. When he reached the summit, Alban knelt down among them and prayed for himself and the soldiers. Then turning to the headsman he bade him strike But the rough soldier had been so deeply touched by Alban's faith that he refused to do the deed, and another executioner had to be called.

It is said that Alban was the first man in England to be killed for being a Christian. He was called Saint Alban, and in memory of him the name of the town where he lived was changed from Verulam to St. Albans, the name it bears to this day. On the spot where his head was struck off there was built to his memory a beautiful church, where now stands the grey and massive abbey of St. Albans in honour of the first British martyr.

Wordsworth, one of our English poets, wrote of him:

"England's first martyr, whom no threats
could shake,
Self-offered victim, for his friend he died
And for the faith· nor shall his name forsake
That hill, whose flowery platform seems to rise
By nature decked for holiest sacrifice."

(The martyrdom of Saint Alban is supposed to have taken place in the third century There is, however, no record of it till the sixth century, and it is possible that Saint Alban is only a legendary figure)

Saint Helena, August 18

St Helena is one of the most notable women in history for she was the mother of Constantine the Great, the emperor of Rome who declared himself a follower of Christ, and issued a decree giving all Christians liberty to worship as they would. By this decree the Christians were no longer hunted, tortured and killed. They no longer had need to hide in the dark underground passages of the catacombs. They were free to live

like other people, and free to worship as they pleased St. Helena was probably born at Nicomedia, a flourishing town in Asia Minor We know little of her life until she became quite an old woman, when, being a faithful Christian, she travelled to the Holy Land to find the places where Christ had been born, where He lived and suffered, was crucified and buried At Jerusalem St Helena discovered the True Cross on which Christ was crucified. Long afterwards, a famous Italian artist, Agnolo Gaddi (1380), painted on the walls of the church of the Holy Cross at Florence a series of pictures depicting the legend of the origin and finding of the Holy Cross, and this is the legend You must try to imagine the beautiful pictures which explain the different parts of the story.

The traditional legend relates that: "Adam, being sick, sent his son Seth at the Gates of Paradise to procure the oil of mercy to anoint him. The archangel Michael appeared and told Seth that the oil could be obtained only after 5,500 years (the period corresponding with the interval from the Fall to the Atonement) had elapsed, meanwhile he gave him a branch of the tree whereof Adam had eaten, bidding him to plant it on Mount Lebanon, and that when it bore fruit his father would be healed. Seth returned and finding his father dead, buried him and planted the branch on his grave, where it took root and flourished into a big tree till the days of Solomon, when it was cut down and used in building the Temple. The workmen, however, finding the 'wood' unsuitable, rejected and threw it aside into a certain marsh, where it served as a bridge. But when the queen of Sheba came to Jerusalem to visit Solomon, and was about to step upon the 'wood' to cross the said marsh, she beheld in a vision how the Saviour of the world was to be suspended on it, and forthwith she knelt down and worshipped the 'wood'; at the same time informing Solomon that when this event should occur the kingdom of the Jews would come to an end. Solomon, alarmed, caused the tree to be buried in the deepest bowels of the earth, on the spot whence afterwards arose the Pool of Bethesda. At the time of Our Lord's passion, the tree, having been found floating on the surface of the water, was taken out by the Jews and used to construct the Cross of Christ.

"After the crucifixion, the Cross lay buried for three hundred years, until the Empress Helena, mother of Constantine, discovered it, together with the crosses of the two thieves. The difficulty of distinguishing the Cross of Christ from the two pertaining to the robbers was solved by the bishop of Jerusalem, who caused a dying woman to touch all three, and when she came to the True Cross she was immediately healed. Helena caused the Cross of the Lord to be taken to Jerusalem and to be cut in halves; one half she carried away for her son, the other half she left, enclosed in a costly silver shrine, at Jerusalem.

"After many years, Chosroès, king of the Persians, subjugated all the kingdoms of the East, took Jerusalem, and carried away the part of the True Cross left there by Helena. He built a tower of gold and silver, in which he dwelt, and placing the Cross beside him, commanded all men to worship him as King of kings, and Lord of lords. This aroused the indignation of the Christian emperor Heraclius, to whom an angel appeared bidding him to recover the Cross Heraclius, with a mighty army, came to the Danube to fight against the son of Chosroes, and the two princes agreed to settle their dispute by single combat on the bridge, in which Heraclius defeated and killed the son of Chosroes. He then went to Chosroes, seized him in his tower, beheaded him and carried off the Cross back to Jerusalem. But when, mounted on his royal steed, he was about to enter the city through the gate which the Lord had entered on an ass, the stones of the gate suddenly descended and closed themselves up like a wall. An angel appeared and reproved the emperor for his presumption. Then Heraclius shedding tears at once dismounted, and stripped to his shirt,

took the Cross and walked barefooted to the wall, which then parted, giving him free admission, and he finally restored the Cross to its place."

There is another church in Italy which is also connected with the wonderful discovery of St Helena. In the cathedral of Monza, at Milan, is the celebrated Iron Crown of the Lombards It consists of a wide band of gold adorned with precious stones, while the rim of iron inside is said to have been made from a nail of the True Cross brought by the Empress Helena from Palestine. With this the Lombard kings and the German emperors—Frederick Barbarossa, Henry VII of Luxembourg, etc —were crowned. It was used by Charles V., who crowned himself with it at Bologna in 1530, and by Napoleon I, in 1805, who placed it on his own head with the words, "Dieu me l'a donnée, gare à qui la touche."

In England a number of churches are dedicated to St. Helena, and in the National Gallery, London, there is a well-known picture of this notable saint. The picture, called the "Vision of St. Helena," was painted by the artist Paul Veronese. It shows us the figure of a stately and beautiful woman asleep on a window seat and leaning against the frame of the open window Outside, against the sky, is seen the shape of a large cross upheld in the arms of two little winged cherubs



CHAPEL, HOLYROOD PALACE
Ruined in the rising against Mary, 1567.

St. Helena died about the year 327 at the age of eighty. Constantine the Great took his mother's body to Rome, where she



From the painting by Paul Veronese] [*National Gallery.*

THE VISION OF ST. HELENA

was buried with the highest honours. In one of the rooms of the Vatican, the residence of the popes, there is a massive tomb of St. Helena, and opposite to it is another similar tomb of her daughter Constantia.

Many churches in Britain were dedicated to the Holy Rood or Cross One at Edinburgh became the nucleus of the palace of the Scottish kings. Holy Rood Day was one of much sacred observance all through the Middle Ages.

Saint Martin of Tours, November 11

St. Martin (*c.* A.D 316-400), saint and bishop, was born in the country now called Hungary His father, a Roman, had risen from the rank of a simple soldier in the Roman army to be a military leader. Both his father and mother were pagans, but at ten years of age Martin himself became a catechumen of the Christian faith. At the age of fifteen he was obliged to enter the Roman army, but this was a life for which he had no liking. At Amiens, in France, occurred the famous incident of his meeting with a beggar to whom he gave half his military cloak. As St. Martin was returning with troops to Amiens he met at the gate of the city a poor old beggar, half naked, and perishing with cold. The beggar asked for help, but St. Martin had no money or food to give him, so with his sword he cut his long cloak in two and put one half round the frozen beggar. Some of the people who saw this thing done laughed and jeered at what they thought was a silly act. That night St. Martin had a vision of Christ dressed in the portion of cloak which had been given to the beggar. In the vision Christ turned to the angels and showing the cloak said, "Martin, the catechumen, hath given Me this garment." Then the vision vanished. Many pictures and statues have been made showing the incident of St. Martin and the beggar. (See public arms of Dover, page 475.) Soon after this he received baptism, and when, two years afterwards, he left the army, he sought out and joined Hilary, bishop of Poitiers.

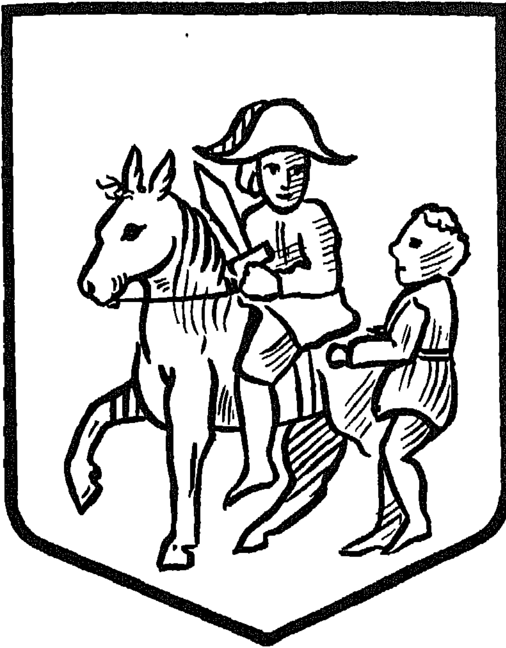
After a few days at Poitiers, St. Martin felt he must go home to his parents in Hungary, and try to convert them to Christianity. He reached his home and converted his mother, but his father remained a pagan. Here St. Martin was persecuted by a sect of Christians called Arians, and at last he took refuge in a lonely island near Genoa, where he lived chiefly on roots and berries, and spent long hours in prayer and religious thoughts.

At last he returned to Poitiers, and together he and St. Hilary founded a monastery. Besides this, he travelled about France teaching and giving help to the Christians.

About A D. 371 the bishop of Tours died and the people chose St. Martin for their bishop. Now he was a very humble-minded man and had no wish to become a bishop. His friends knew this and as they feared that he would refuse the honour, they used a stratagem to get him to go to Tours. They pretended that there was a sick companion there, and at once Martin set out for the city. When he arrived he found no sick friend, but a large company surrounded him and would not let him escape until he had been consecrated bishop

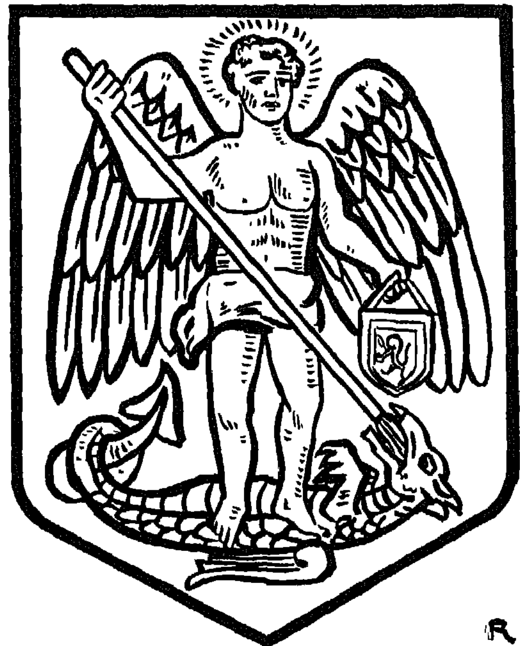
In order to have time for meditation and prayer St. Martin founded the monastery of Marmoutier-les-Tours on the banks of the Loire. About eighty monks followed him, and they bored for themselves caves in the sandstone, where they lived, dressing in rough skins, eating only once a day, and having all things in common. From this retreat St. Martin and his followers went out to all parts of France to teach the people about Christ. Everywhere he taught the Gospel, and pulled down the heathen altars and temples, all the time keeping up his monastic rule of life, fasting, praying, and sleeping on straw with a stone for a pillow. From his earliest years he was remarkable for the kindness of his heart. On one occasion a certain count, noted for his cruelty, brought to Tours a long chain of miserable captives

SKETCHES FOR THE BLACKBOARD









PUBLIC ARMS

DOVER (*St Martin and the Beggar*)
LEITH (*The Blessed Virgin and Holy Child*)

SEE OF THE ISLES (*St Columba*)
LINLITHGOW (*St Michael and the Dragon*)

with the intention of torturing and executing them the next day. On hearing of this, St. Martin hurried from Marmoutier to the house of the count at Tours. It was midnight and all were asleep, but the saint was not afraid of the count's anger. He roused the house and would not leave until the count had promised to spare and set free the captives.

In spite of advancing age, St. Martin continued his missionary journeys on foot, or if the journey was very long he would ride on an ass. He died in A.D. 400 at the age of eighty-four, and both the people of Poitiers and of Tours demanded that his tomb should be made with them. Tours was successful in obtaining his body and more than 2,000 monks formed the funeral train. Tradition tells that the saint's body floated up stream on the Loire to Tours without either sail or oars, while the monks on the banks chanted dirges under the starlit heavens. Next morning the trees on the banks of the river had all burst into blossom.

St. Martin is the patron of jovial meetings and his festival is kept at Martinmas, November 11. He has been called "The Apostle of the Gauls" and the "Soldier Saint."

Saint Patrick, March 17

Everyone knows that an Irishman is called *Pat* and *Paddy*. He gets his name from his best loved saint—St. Patrick—who was a very lovable, clever and holy man.

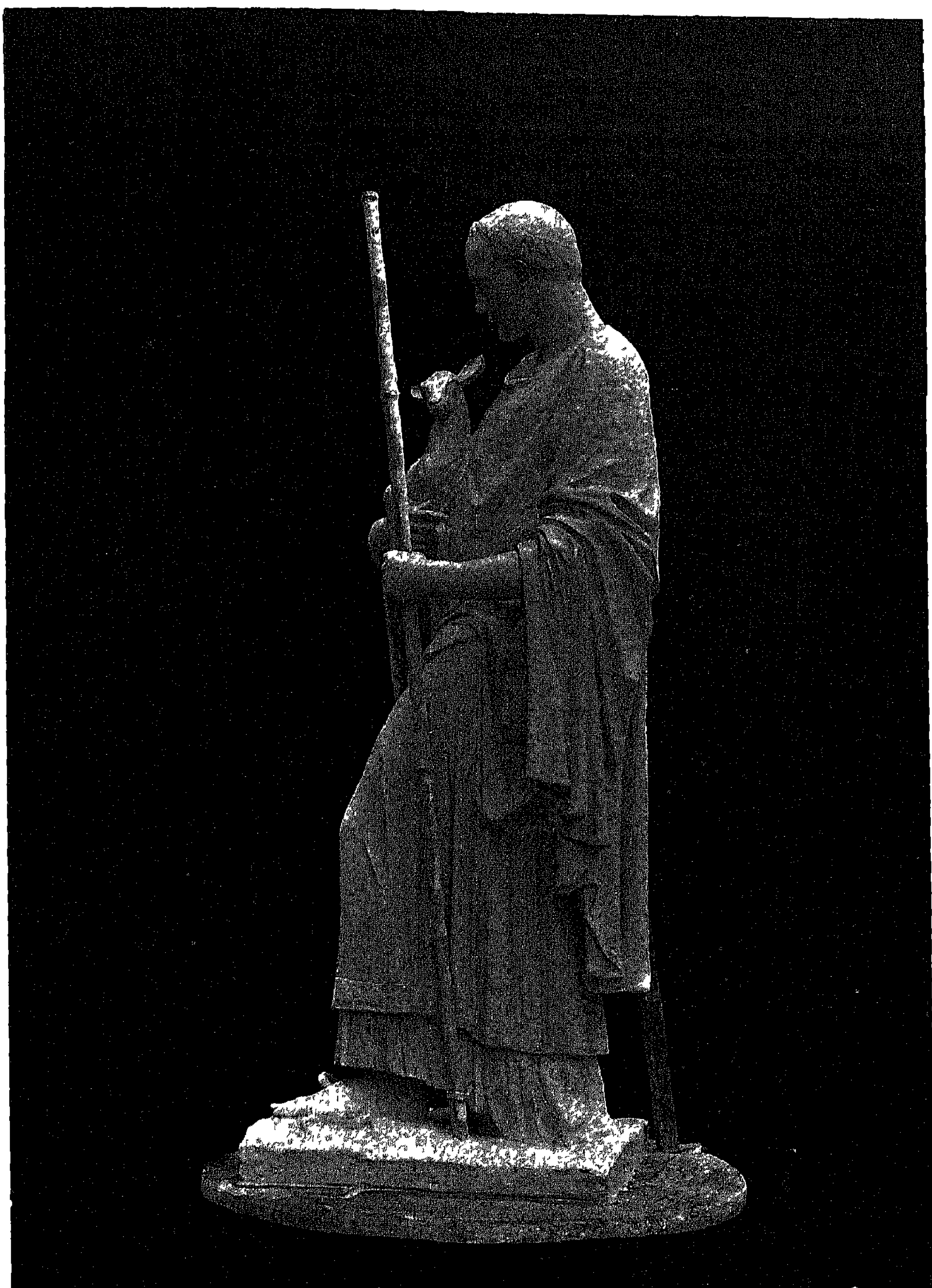
" St. Patrick was a gentleman
And born of decent people——"

so the old rhyme tells us He was born in Britain, and his father was a Roman magistrate and a Christian. The young Patrick lived on his father's farm until he was sixteen, when he was carried off by pirates and taken to Ireland, where he was sold to King Milchu as a slave. He became a swineherd and looked after the king's pigs for six years It was a hard life, tending the swine as they fed on acorns in the woods, the nights were lonely and often it rained and sometimes snowed. In his loneliness Patrick constantly prayed to God.

After six years Patrick heard a voice in a dream say, "Thy fasting is well, thou shalt return to thy country." Again, in another dream, a voice told him that a ship was ready for him two hundred miles away, he obeyed the voice and fled to the coast where he found the ship taking Irish wolf dogs across the sea After three days they landed on the coast of Gaul. We do not know what Patrick did in Gaul but it is likely that he studied in some of the monasteries. After a time he returned to his home in Britain and here again he had another striking dream, and this is how he related it: "There in the dead of the night I saw a man coming to me as if from Ireland bearing innumerable epistles, and I read the beginning of one which contained these words: THE VOICE OF THE IRISH. And I imagined I heard the voice of those who lived near the Western Sea And thus they cried —'We pray thee, holy youth, to come and henceforth walk amongst us as before.' And I was greatly pricked in my heart and could read no more and so awoke."

St. Patrick now set about preparing for the work of teaching the Gospel in Ireland "The voice of the Irish" never died out of his heart, and he longed greatly to teach the love of Christ to those among whom he lived while feeding the swine of King Milchu. He returned to Gaul, where he studied hard for perhaps fourteen years. Finally, he became a bishop and then he started on his missionary journey to Ireland.

Already there were some Christians in the south-eastern part of Ireland, but generally the island was given up to idol worship and heathen rites. Ireland was quite different from her neighbouring countries, Wales,



By Edmund Brock] [*By kind permission of the sculptor*

STATUE OF ST PATRICK

England and Scotland, as the Romans had not ruled Ireland or civilised it. St. Patrick found that the Druids had great power in Ireland, and there were many chieftains and kings to win to his side. St. Patrick set to work wisely and patiently to win the Druids to Christianity, and to make friends with the kings and chieftains. He christianised the ancient customs; he tried to turn earthly things to heavenly uses.

Little by little, the Druids became Christian priests, the schools of the bards became Christian schools, the heathen songs and music became Christian hymns, and the Irish harp was used in the praise of the true God. On three stone pillars of the Druids, St. Patrick wrote the name of Christ in Hebrew and Greek and Latin

Now we will see what places St. Patrick visited. He landed in Wicklow, and the first place he sought was the place he so longed to see, the country of King Milchu, for whom he had worked as a swineherd. After teaching in this place, St. Patrick went north to the shore of Strangford Lough. Here the chieftain was converted, and gave to the saint some land and a wooden barn for worship. Then St. Patrick went on to Tara, where the harps of the bards used to hang. It happened to be the time of a heathen festival at Tara during which no fire might be kindled until the king's fire had been lit. However, St. Patrick had the courage to light the Easter fire on Easter Eve; and after much talking and arguing between St. Patrick, the king, and the Druids, at last the king agreed to protect St. Patrick, and many people were baptised. It is said that the saint spent seven years teaching in Connaught, and seven in Ulster When the king of Munster was baptised, the sharp end of St. Patrick's crozier accidentally pierced the king's foot, but he bore the pain silently thinking it was a necessary part of his baptism. Within a hundred years after the death of St. Patrick Ireland had become a Christian country.

On St. Patrick's Day Irishmen wear as an emblem a piece of shamrock, for we are told that it was with this little plant, which has three leaflets making one leaf, that St Patrick taught the doctrine of the Holy Trinity—Three in One and One in Three There are, strangely enough, no snakes in Ireland, and the story goes that St. Patrick drove them out of the land into the sea. The last great snake he put in a strong box and threw it into the water, and the wriggling of the snake in the box causes the waves to rise and fall.

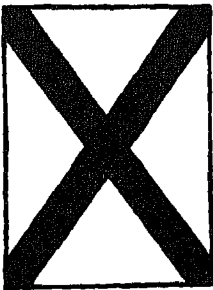
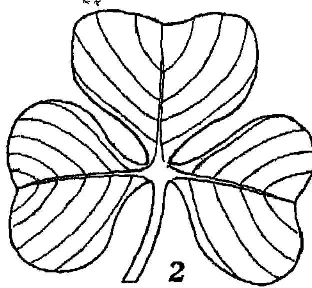
The legend of St Patrick's Horn When Gerald de Barri was in Wales (1182) he met a poor Irishman who went about begging, carrying round his neck as a relic a brazen

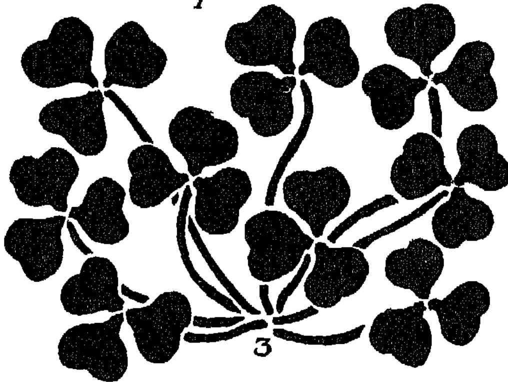


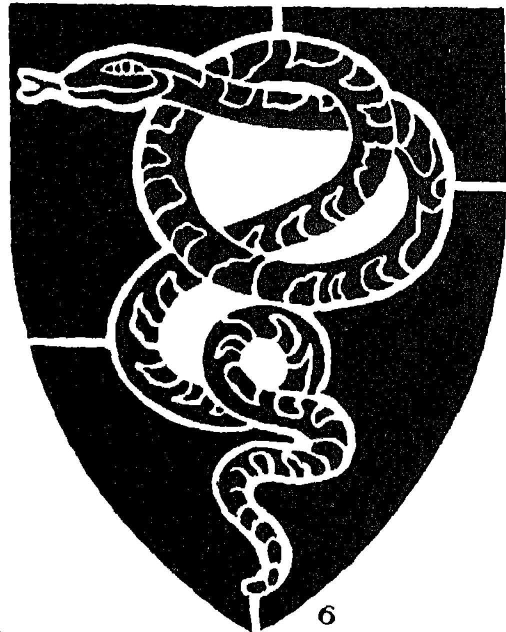
LEGEND OF ST. PATRICK'S HORN
Thirteenth Century

horn which he said had belonged to St. Patrick. He gave it to the bystanders to kiss, after the Irish custom, but warned them not to blow it, out of reverence for the Saint A priest snatched it from his hand and blew it; instantly he was struck with paralysis, and lost both speech and memory. A pilgrimage to Ireland, by way of atonement to St. Patrick, brought about a partial recovery.

DRAWINGS FOR ST. PATRICK'S DAY





1 St Patrick's Cross 2 Outline Drawing of the Shamrock 3 Stencil Design of the Shamrock 4 Decorative Design of the Serpent and Shamrock, Emblems of St Patrick 5. The Harp, the Arms of Ireland 6 Stencil Design of the Serpent

THE MINSTREL BOY

The minstrel boy to the war is gone,
In the ranks of death you'll find him,
His father's sword he has girded on,
And his wild harp slung behind him.
"Land of song!" said the warrior-bard,
"Though all the world betrays thee!
One sword at least thy rights shall guard,
One faithful harp shall praise thee!"

The minstrel fell—but the foeman's chain
Could not bring his proud soul under,
The harp he loved ne'er spoke again,
For he tore its chords asunder,
And said, "No chains shall sully thee,
Thou soul of love and bravery!
Thy songs were made for the brave and free,
They shall never sound in slavery!"

T. Moore.

Saint Geneviève, January 3

(The story of St. Geneviève's early life and the manner in which she helped the people of Paris when Gaul was overrun by Attila is told in Volume III, page 119. The following is the account told by Charlotte Yonge of St. Geneviève's bravery when Paris was taken by Hilperik, the leader of the Franks The illustration which forms the frontispiece to this section of the Encyclopaedia depicts the meeting of the child Geneviève at the age of seven with the two celebrated bishops, Germanus, of Auxerre, and Lupus, of Troyes, who, on their way to Britain, were passing through the village of Nanterre where Geneviève lived. "The sweet, childish devotion of Geneviève so struck Germanus that he called her to him, talked to her, made her sit beside him at the feast, gave her his especial blessing, and presented her with a copper medal with a cross engraven upon it.")

In a few more years the Franks were overrunning the banks of the Seine, and actually venturing to lay siege to the Roman walls of Paris itself The fortifications were strong enough, but hunger began to do the work of the besiegers, and the garrison, unwarlike and untrained, began to despair. But Geneviève's courage and trust never failed; and finding no warriors willing to run the risk of going beyond the walls to obtain food for the women and children who were perishing around them, this brave shepherdess embarked alone in a little boat, and guiding it down the stream, landed beyond the Frankish camp, and repairing to the different Gallic cities, she implored them to send succour to their famished brethren She obtained complete success. Probably the Franks had no means of obstructing the passage of the river, so that a convoy of boats could easily penetrate into the town, and at any rate they looked upon Geneviève as something sacred and inspired whom they durst not touch; probably as one of the battle maids in whom their own myths taught them to believe One account, indeed, says that, instead of going alone to obtain help, Geneviève placed herself at the head of a forage party, and that the mere sight of her inspired bearing caused them to be allowed to enter and return in safety; but the boat version seems the more probable, since a single boat on the broad river would more easily elude the enemy than a troop of Gauls could pass through their army.

But a city where all the valour resided in one woman could not long hold out, and in another inroad, when Geneviève was absent, Paris was actually seized by the Franks. Their leader, Hilperik, was absolutely afraid of what the mysteriously brave maiden might do to him, and commanded the gates of the city to be carefully guarded lest she should enter: but Geneviève learnt that some of the chief citizens were imprisoned, and that Hilperik intended their death, and nothing could withhold her from making an effort in their behalf The Franks had made up their minds to settle, and not to destroy. They were not burning and slaying indiscriminately, but while despising the Romans, as they called the

Gauls, for their cowardice, they were in awe of their superior civilisation and knowledge of arts The country people had free access to the city, and Geneviève, in her homely gown and veil, passed by Hilperik's guards without being suspected of being more than an ordinary Gaulish village maid, and thus she fearlessly made her way, even to the old Roman halls, where the long-haired Hilperik was holding his wild carousal Would that we knew more of that interview—one of the most striking that ever took place! We can only picture to ourselves the Roman tesselated pavement bestrewn with wine, bones, and fragments of the barbarous revelry. There were untamed Franks, their sunburnt hair tied up in a knot at the top of their heads, and falling down like a horse's tail, their faces close shaven, except two huge moustaches, and dressed in tight leather garments, with swords at their wide belts. Some slept, some feasted, some greased their long locks, some shouted out their favourite war songs around the table, which was covered with the spoils of churches, and at their head sat the wild, long-haired chieftain, who was a few years later driven away by his own followers for his excesses—the whole scene was all that was abhorrent to a pure, devout and faithful nature, most full of terror to a woman. Yet there, in her strength, stood the peasant maiden, her heart full of trust and pity, her looks full of the power that is given by fearlessness of them that can kill the body. What she said we do not know—we only know that the barbarous Hilperik was overawed, he trembled before the expostulations of the brave woman, and granted all she asked—the safety of his prisoners, and mercy to the terrified inhabitants. No wonder that the people of Paris have ever since looked back to Geneviève as their protectress, and that in after ages she had grown to be the patron saint of the city.

She lived to see the son of Hilperik, Chlodweh, or, as he was more commonly called, Clovis, marry a Christian wife, Clotilda, and after a time become a Christian. She saw the foundation of the cathedral of Notre Dame, and of the two famous churches of St. Denys and of St. Martin of Tours, and gave her full share to the first efforts for bringing the rude and bloodthirsty conquerors to some knowledge of Christian faith, mercy and purity. After a life of constant prayer and charity she died, three months after King Clovis, in the year 512, the eighty-ninth of her age.

Saint David, March 1

For about one hundred and fifty years from the time when the Saxons invaded Britain in the middle of the 5th century, they carried on one of the most cruel conquests known in history. By the end of this conquest the Britons had been swept out of their land, their names had been blotted out, their towns had been destroyed, their language was no longer heard, and Christianity was forgotten. A remnant of the people had fled and taken refuge in the mountains and valleys of Wales. Here the Christian religion flourished in a marvellous manner, and here lived and died St. David, the patron saint of Wales.

We are told that St. David was the son of a prince named Sandde, his mother was a saintly woman named Non. St David was born about A D. 500 and is said to have lived to the age of one hundred years. He was called "David the Water Drinker," because he never drank anything stronger than water.

St David was educated in a monastery and became the chief bishop in South Wales, where he was greatly loved, and where he founded many churches, fifty-three of which still bear his name His church was at Caerleon, and it is believed that he made a pilgrimage to Jerusalem.

After a time St. David moved from his bishop's church at Caerleon and went to a far-off headland in what is now Pembrokeshire, south-east of St David's Head, which is named after him It may be that it seemed



A Design on the Leek

safer to get as far away as possible from the conquering Saxons. Here in a marshy valley St. David laboured, teaching the Gospel and helping the people to live peaceably together tending their flocks and herds, growing grain and making clothes. The name of the place was altered to St. David's, and by that name it is known to this day.

After a long life spent in teaching and doing good, St. David died on March 1 beloved by the people. Since that time, March 1 has been known as St David's Day to commemorate his death so long ago. There is a tradition that when dying, St. David had a vision in which he saw Christ, and his last words were, "Lord, take me up after Thee" He died surrounded by holy men who had come from many parts of Britain and Ireland to bid him farewell After his death the fame of St. David increased, and his shrine became a place of pilgrimage, among the notable persons who visited it were William the Conqueror, Henry II., Edward I. and Queen Eleanor. In the reign of Henry I. St David was canonised, that is, publicly recognised as being a saint.

The custom of wearing a leek in his honour is said to have begun in a battle against the Saxons In order to gain an advantage over the Welsh, some Saxon soldiers agreed to adopt the stratagem of dressing themselves in the clothes of their Welsh prisoners A Welsh spy, disguised as a minstrel, found out the stratagem and, as a token to show friend from foe, it was quickly decided that each Welshman should wear in his helmet a leek taken from a neighbouring field. And then, said the Welsh leader, "He who wears not a leek is a foe" From that time, a Welshman has been proud to wear the leek on St. David's Day. (The daffodil, too, is frequently used as a Welsh emblem)

It is little wonder that the people of Wales are proud to have St. David as their patron saint, for his long holy life was spent in teaching the Gospel and in doing good deeds for his country. For nearly one thousand years St. David's was the chief centre of religion in South Wales. The wild picturesque country round the city is full of historical remains, cromlechs and ruined chapels, and among the latter is the chapel of St. Non, named after the mother of St David The cathedral church which now stands at St. David's is one of the largest and most interesting in Wales.

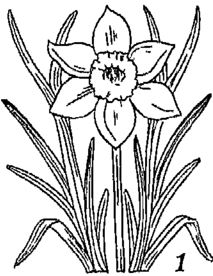
The Land of My Fathers

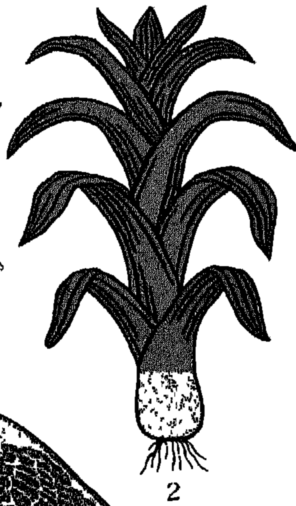
How dear is the land of my fathers to me,
The land of the minstrel, the home of the free,
Her fighters so fearless, her heroes so bold,
For freedom have fought from of old.

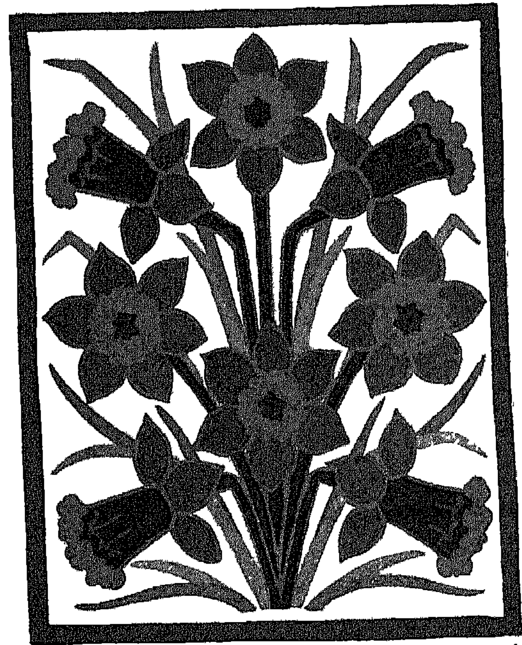
Chorus :
Dear Land! O how I love thee my land,
Till Ocean's waves forsake thy strand
I'll cherish my dear native land

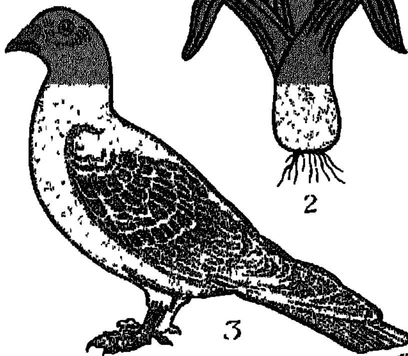
Old mountainous Cymru, the patriot's home,
How sweet through thy vales, o'er thy hillsides to roam,

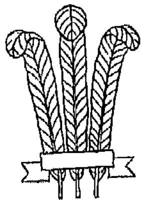
DRAWINGS FOR ST. DAVID'S DAY

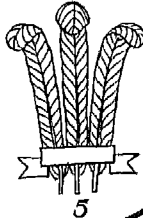


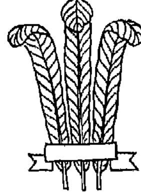




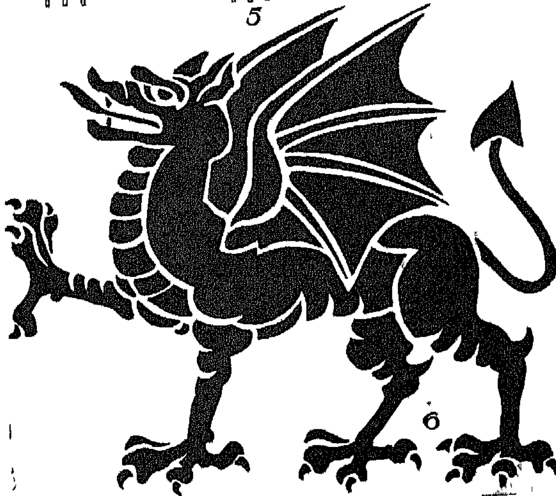












1 Outline Drawing of the Daffodil, Emblem of Wales   2 Drawing of the Leek, Emblem of Wales   3 Decorative Drawing of the Dove, Emblem of St David   4 Decorative Design of the Daffodil   5 Feathers of the Prince of Wales   6 Stencil Drawing of the Dragon, Emblem of Wales   7 Stencil Design of the Daffodil

To list to thy streams, as they wind to the sea—
Their murmurs are music to me.

Dear Land! etc.

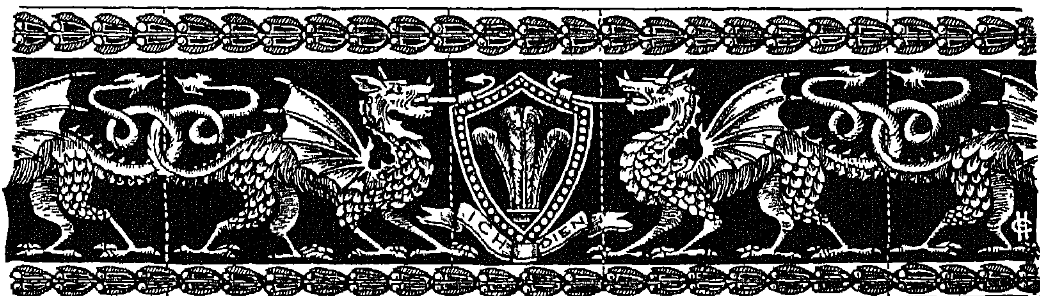
Though traitors have trampled the hill and the vale,
Our old Cymric tongue is still telling her tale,
The Awen lives on where fierce foemen have met,
Her harpstring is vibrating yet.

Chorus.
Dear Land! O how I love thee my land;
Till Ocean's waves forsake thy strand
I'll cherish my dear native land

God Bless the Prince of Wales

Among our ancient mountains,
And from our lovely vales,
O let the prayer re-echo,
"God bless the Prince of Wales."
With heart and voice awaken
Those minstrel strains of yore,
Till Britain's name and glory
Resound from shore to shore.

Should hostile bands or danger
E'er threaten our fair isle,
May God's strong arm protect us,
May heaven still on us smile!
Above the throne of England
May fortune's star long shine,
And round its sacred bulwarks,
The olive branches twine.



Saint Columba, December 12

St. Columba was an Irish saint—

" The powerfullest preacher
And tenderest teacher
And kindliest creature
In old Donegal "

For it was at Gartan, in County Donegal, that St. Columba was born on December 7, A.D. 521. His father, Feidlimid, was a member of the royal family, and his mother, Eithne, was descended from the king of Leinster. Columba grew up a most pious man who gave his whole life to the teaching of the Gospel. He studied in different Irish monasteries and at length was ordained priest. He founded many churches and monasteries in Ireland, for he had much authority not only for his goodness but also because his parents belonged to royal families St. Columba became the apostle of the Picts in Scotland, and a curious story is told of the reason for his leaving his native land. St. Columba had copied a book which he much desired, but the owner of the book was jealous and angry and he claimed both the book and the copy A chief was called upon to judge the matter and this was his judgment: "To every cow her own calf, and to every book its own son-book" Thus Columba had to

give up the book he had so carefully copied. Now St Columba had many friends and they were not willing to see Columba lose his book, and they went to battle with the chief and his men, and many lives were lost Then St. Columba was greatly grieved to think that he had been the cause of men losing their lives in battle, and he made up his mind to win as many souls for God as he had caused men to be slain, and further, that he would, as a penance, leave his loved Ireland for ever With twelve disciples he crossed the sea to the little island of Iona, using a wickerwork boat about sixty feet long, with oaken beams, and covered with oxhide.

It was on the Eve of Whitsunday, May 13, A D. 563, that St. Columba and his twelve companions landed on the barren island. The first thing that the saint did was to climb the highest peak of rock to make sure that he could no longer see Ireland, a sight which would have been more than he could bear St Columba built a church and a monastery and he and his disciples had to work very hard in order to live They had to be seamen, fishermen, carpenters, blacksmiths, tillers of the ground and shepherds. More and more men came to join them, and gradually the monastery grew larger.

Besides the church and the cells for the monks, there was a wooden hut for the abbot, St Columba, there was a large kitchen, a dining-room where all ate together, and a hospital for the sick Outside the walls of the monastery they built guest chambers for the countless visitors who came to see St Columba to ask his advice. In time there were barns, kilns, stables, cowsheds, the smithy, the carpenter's shop, granaries in which to store the grain of rye, oats and barley, and mills to grind the grain into flour.

Boats of wickerwork had to be built, for fishing and for ferrying guests, and for the mission voyages of the monks; sail making, tanning hides, and making farm carts had to be done. The monks had also to spin the wool of their sheep and weave it into cloth, and then to make the cloth into clothes. Shoes had to be made of hide. All the work indoors and outdoors was done by the monks themselves.

But the chief work St Columba had in mind was to teach the heathen Picts of the north: and for thirty years he worked night and day for them, toiling up and down mountain paths, braving the perils of the stormy seas, journeying by sea and land among the islands of the Hebrides and through the country to the northern Highlands To this day his name is known and loved in lonely islets, in wild Highland glens, in cities and in villages.

After labouring for about thirty-four years in Iona and on his missionary journeys to the Picts, St. Columba had reached the age of seventy-seven, and he felt that his work was ended On a certain Sunday it was revealed to him that in the middle of that night he should depart He went out to bless a barn and the harvested grain that was in it, and then he said to the monk who attended him, "This day is indeed a Sabbath to me, for it is the last day of my present laborious life, and on it I rest after the fatigues of my labours; this night at midnight, I shall go the way of our fathers." On his way back to the monastery, St Columba, bowed with age, had to sit down and rest a little As he rested, an old white horse, which had formerly carried milk for the monks, came up to him and laid its head on the abbot's bosom with every sign of love. The Saint blessed the old horse and said farewell to it

With his hands uplifted the Saint blessed the monastery, saying, "Small and mean though this place is, yet shall it be held in great and unusual honour" He returned to his hut and began to write out the thirty-third psalm. He finished writing the words, "They that seek the Lord shall want no manner of thing that is good," and then he paused "Here," he said, "I must stop; the rest let Baithene write" His work was done. That night he quietly passed away and the church resounded with loud

lamentations of grief from the sorrowing monks.

Saint Hilda, November 18

St. Hilda, more properly called St. Hild, was an English saint who lived during the seventh century At that time England was divided into a number of kingdoms, of which Northumbria was the foremost, and one of its greatest kings was Edwin. It is always easy to remember this king's name because the city of Edinburgh is named after him, for on the high rocks there he had built a strong fortress to guard his land against the Picts and Scots. Now Edwin himself was a heathen, but he married a Christian princess named Ethelberga who was a sister of the king of Kent. When Ethelberga went to Northumbria there went with her Paulinus, a follower of St Augustine. In time Edwin was converted to Christianity and Paulinus became the first bishop of York. St Hilda was a daughter of Heneric, a nephew of Edwin. Both her parents died when she was a young girl, and at the age of twelve she lived at the king's court and was baptised by Paulinus. For half her life, that is until she was thirty-three years of age, Hilda lived the ordinary life of an English lady of those days; and they were troubled times, for king fought against king, lands were ravaged, houses burnt and hundreds of people slain. Many people in the land had not yet become Christians, but there were numerous monasteries where monks and nuns gave up their lives to the service of God. Hilda became a nun, and in time one of the most notable who have ever lived. After some years the saintly British bishop Aidan, who had been a monk at the famous monastery of Iona which was founded by St. Columba, gave her a piece of land on the north side of the river Wear on which to build a monastery. Later on, about the year 650, she became abbess of Hartlepool where for some years she governed with much wisdom and piety. From Hartlepool Hilda moved to Whitby, and in 657 founded the famous double monastery, for both monks and nuns. Here the abbess gained great fame for her prudence and wisdom Kings and princes came to her for advice, and no less than five bishops were trained as monks at Whitby as well as the poet Caedmon. The story of Caedmon's meeting with St. Hilda is very interesting. Caedmon was not a monk, but his business was to help look after the cattle which belonged to the monastery. It was the custom in those times when night came on for the men to meet together in the lord's hall, and after a meal the harp was passed round and each man in turn sang or recited to the music of the harp. Caedmon had no book learning and he could never manage to repeat any poetry or sing a song. This was a great grief to him, and he felt so miserable at the hall gatherings that rather than say he could not sing he would slip out of the hall and go away to his home or the stable.

Once, when he had done this, and gone from the feast to the stable where he had that night charge of the cattle, there appeared to him in his sleep One Who said, "Sing, Caedmon, some song to Me" "I cannot sing," he answered, "for this cause left I the feast and came hither." He Who talked with him answered, "However that be, you shall sing to Me." "What shall I sing?" enquired Caedmon. "The beginning of created things," replied He. Caedmon in his dream immediately began to sing verses which he had never heard before. When he awoke, he was not only able to repeat the lines which he had composed in his dream, but he went on at will in the most excellent poetry. In the morning, full of joy and greatly excited, he went to the steward and told him of his new and wonderful gift of poetry, and he was taken before the abbess. St. Hilda called together some of the learned monks to hear Caedmon's story, and then one of them read to him a short passage from the Scriptures and told him to come back the next day and sing about what had been read to him. On

the next morning he repeated in Anglo-Saxon verse everything that he had heard. The abbess was so delighted to have found such a wonderful poet that she persuaded Caedmon to become a monk in her monastery, and there he continued to compose beautiful poetry about all that he learned from the Scriptures So Caedmon was the first English Christian poet.

For many years St Hilda continued her good work as abbess of Whitby. In place of the first buildings of wood there were now stately stone structures, for men who had travelled to Rome and who had seen the beautiful churches in Italy taught the English how to build similar beautiful churches and monastic houses. Missionaries went out from Whitby and spread the Gospel message of Peace and Goodwill through many parts of the country, for the famous historian Bede tells us that of all St. Hilda's virtues peace and love were her greatest. Under her rule men and women diligently read the Holy Scriptures and so fitted themselves to teach others. One of the most notable women who lived at the monastery was Ethelfleda, the daughter of Oswy, another king of Northumbria. Edwin was killed in battle, and so, too, was his nephew, Oswald, who ruled after him Oswy, a brother of Oswald, took his place, and he won the great battle of the Winwaed, in which the heathen king Penda of Mercia was slain. As a thankoffering for his victory, Oswy gave his daughter, Ethelfleda, to the monastery at Whitby for her to be brought up as a nun The princess was only one year old when St. Hilda took charge of her, and during the long years of St. Hilda's rule the princess shared her spiritual mother's care She was her child, her companion and her confidante, and when, in A D. 680, St Hilda passed to her rest, Ethelfleda became abbess of the monastery. Among the last messages of St Hilda to her people were these words "As long as you are in good health serve God with all your might; when you are ill, remember all His mercies with thankfulness."

Saint Margaret, Queen of Scotland, November 17

Margaret was a Saxon princess, the granddaughter of Edmund Ironside. When the Danes, under Canute, invaded and conquered England, Edmund was murdered and his two sons were sent to the king of Sweden with instructions to put them to death privately. This the king refused to do and he sent the young princes to Solomon, king of Hungary, by whom they were well received. Edmund, the elder brother, died, and Edward, the younger, married Agatha, a German princess, by whom he became the father of Edgar Atheling, Christina and Margaret.

When Margaret was about nine years old, the king of England, Edward the Confessor, asked Margaret's family to return to their native country, and for a time Margaret was taught by the pious Lanfranc, afterwards archbishop of Canterbury. The death of Edward the Confessor and the accession of William the Conqueror caused Margaret's family to flee from England, for her brother, Edgar Atheling, was the Saxon heir to the throne. A storm cast their vessel on the shore of the Firth of Forth, and they asked for the protection of the Scottish king Malcolm Canmore, who had his palace at Dunfermline Malcolm showed great kindness to the royal strangers, remembering how he himself had been befriended during his exile by their relative, Edward the Confessor. Malcolm was captivated by the beauty and amiable character of Margaret, who was then about twenty-four years of age, and he made her his queen When William the Conqueror heard of this marriage he outlawed all those nobles who were the friends of Edgar Atheling and they fled to Malcolm, taking much treasure with them to Scotland. The presence of so many English nobles and ladies about the court helped the Scots to change their rough ways of living to the more polished ways of the English court.

The marriage of Malcolm and Margaret

was a very happy one. She was one of the best and greatest queens who have ever reigned, and did more for Scotland than any other woman in the history of that country. The name Margaret means "pearl," and her biographer writes, "the grace of her name was surpassed by the beauty of her soul" She was wise, gentle and especially compassionate to poor people.

Lanfranc, her old tutor, sent to her Turgot, the prior of Durham, to be her chaplain, and with his help and advice Queen Margaret earnestly set about helping and teaching her ignorant subjects. Her servants "loved while they feared her, and feared while they loved" She aided Turgot to teach them Christianity and made the whole life of her court purer and better She had churches built and, among other good works, she had the monastery of Iona rebuilt. She taught her ladies how to weave tapestry for the bare walls, and fine linen for the tables, and to embroider rich hangings for the altar, and beautiful vestments for the priests.

She was a devoted mother to her six children, teaching them herself, and training them to live noble lives. Three of her sons, Edgar, Alexander and David, became kings of Scotland, and the elder daughter, Maud, married Henry I., king of England. Margaret's great influence over King Malcolm was used in the cause of justice, mercy, almsgiving and other good works. Margaret lived a good deal of her life like that of the nuns in a monastery She spent much time in prayer, she lived very frugally and frequently fasted. Yet she knew that it was necessary to uphold the king's dignity, and thus she ordered rich clothes and ornaments to give grace and beauty to the palace, which was resplendent with silver and gold, she herself was dressed, as became a queen, in costly raiment, gems and gold. The Scottish court became famous for its splendour, and for the courteous manners of the nobles and ladies who lived there.

The poor, especially, loved the good Queen. Crowds of miserable people, orphans and widows flocked to her for help and consolation, sick people and beggars were cared for, often by the Queen herself personally. Twenty-four beggars are said to have been fed at the court every day, and in the evening she washed the feet of six poor persons The church of St. Andrew was much frequented by pilgrims, and, remembering how she herself had been cast an exile on those very shores, Margaret built little dwellings on both sides of the Firth, so that pilgrims and poor people might stay there and rest. Food was provided for them and servants were at hand to help travellers and ferry the boats across the Firth. The narrow point of the Firth where Margaret first crossed on her way to Dunfermline is known to this day as *Queensferry*.

Margaret was one of the most learned women of her time and she used her knowledge to benefit the Scots. Besides teaching her own children, she adopted and taught nine little orphan children. She had schools built for the education of her people and she may be considered as the foundress of education in Scotland.

During the Queen's last illness, she received the terrible news that the king and their eldest son had both been killed in battle, and this news hastened her own death. She was buried in the church she had built at Dunfermline, 1093 In 1251 Queen Margaret was canonised for her benefactions to the church and for her holy life, and she is now known as Saint Margaret of Scotland.

Memento Mori

Sweet day, so cool, so calm, so bright—
The bridal of the earth and sky—
The dew shall weep thy fall to-night,
For thou must die.

Sweet rose, whose hue, angry and brave,
Bids the rash gazer wipe his eye,
Thy root is ever in its grave,
And thou must die.



Woman's Work Through the Ages

Sweet spring, full of sweet days and roses,
A box where sweets compacted lie,
My music shows ye have your closes,
And all must die.

Only a sweet and virtuous soul
Like seasoned timber never gives,
But, though the whole world turn to coal,
Then chiefly lives.

Herbert.

WOMAN'S WORK THROUGH THE AGES

1. A peasant woman of the fourteenth century with her distaff with which she spun yarn from wool, or flax, and wove it into garments for the household.

2. A nun of the Middle Ages who lived in the seclusion of a nunnery, her life consecrated to devotion; women belonging to the order of friars are called Sisters.

3. Women weeding, from an illustration in the Luttrell Psalter, *c.* 1340. From very early times to the present day, women have worked on the land, and this method of weeding is still practised in certain parts of the continent.

4. Woman of the same period, fourteenth century, feeding chickens, with her distaff under her arm. Country life has changed but little through the centuries

5. Early fourteenth century, women catching rabbits with a ferret. Rabbits, birds, and game were very plentiful in England in those days, and formed an important part of the people's food. It would need a very quick action to catch a rabbit in such a net as the old artist has shown

6. Late fourteenth century; a man and woman sawing wood, another reminder of the field work done by both men and women.

7. Late sixteenth century, a country woman wearing a muffler, a sort of veil or scarf formerly worn by women for the protection of the head, neck, and ears.

8. An English kitchen-maid, 1644; notice the pattens on her feet, a reminder of the general muddy conditions of the roads which received little attention in those days.

9. Sairey Gamp, a typical nurse of the nineteenth century, such as is described by Charles Dickens in *Martin Chuzzlewit.* Behind her is one of the type of nurses who took her place as education spread. Up to the nineteenth century, the ladies of the land gave most of their time to household duties, such as brewing beer, salting the meat for winter, cooking the food, spinning and weaving. But with the advent of the Industrial Revolution and the spread of education, women began to take a wide and active share in industrial and national work.

10. Modern hospital nurse.


10


11


12


13


14

11. A policewoman of 1920; the greater part of this branch of the police force is now disbanded

12. The modern typist, one of many thousands now in regular employment, particularly in business establishments

13. A school teacher wearing the academic gown of a B A.

14. Lady Astor, the first woman member of parliament to sit in the House of Commons, December 1, 1919.

CHRISTMAS TIME

Hanging up the mistletoe.—Most popular customs at Christmas time bear traces of ancient pagan rites, derived from the Roman Saturnalia, the ceremonies of British Druids and the mythology of the Norsemen The early Christian teachers found it difficult to root out pagan customs, and Christian rites were frequently engrafted on to the old heathen ceremonies.

The use of mistletoe comes down to us from the Druids, who paid great reverence to the mistletoe when it was found growing on the oak, which was thought to be the favourite tree of the sun-god. At the winter solstice a great festival of the sun-god was held in his honour; and at this time the Druids went forth to cut the mistletoe with a golden knife It was afterwards divided into small portions, and people hung up the sprays over their doors in order to obtain the favour of the gods during the winter These rites, in a modified form, were continued during the time of the Roman occupation, and for long afterwards under Saxon rule Nowadays, the old custom of hanging up mistletoe is kept up to add to the fun of the Christmas season, and no one thinks of the Druids in connexion with kissing under the mistletoe.

The yule log.—Burning the yule log on Christmas Eve is a very old custom handed down from our Scandinavian forefathers, who at their feast of the winter solstice used to light immense bonfires in honour of Thor, the god of Thunder. The old custom is still carried out in some country places. In Middle English times, bringing in the yule log was one of the most joyous of Christmas customs A ponderous block of a tree trunk was dragged from the woods to be placed on the hearth of the wide chimney of the baronial hall. As it passed, each wayfarer raised his hat in its honour, knowing that it would crackle and glow a welcome to the guests, for open house was kept at Christmas time As the yule log was dragged into the hall, the minstrels struck up their music and merry songs were sung—

" Welcome be ye that are here
Welcome all, and make good cheer,
Welcome all, another year,
Welcome yule "

Herrick, at a later date, also wrote of the yule log as follows.—

" Come bring with a noise,
My merry merry boys,
The Christmas log to the firing,
While my good dame, she
Bids ye all be free,
And drink to your hearts' desiring.

With the last new year's brand
Light the new block, and
For good success in his spending,
On your psalteries play
That sweet luck may
Come while the log is a-teending * "

All joined heartily in the Christmas festivities of goodwill, at night the bowl of wassail was heated in the glow of the yule log, and men pledged one another to forget old wrongs and live peaceably together.

It was the custom to light the new log with a piece of the last Christmas yule log saved in the cellar for that purpose; and it was believed that keeping the old log was a safeguard against fire A monstrous

* Burning

candle, called the yule candle was burned also on Christmas Eve to light the feast. In the buttery of St. John's college, Oxford, there has been preserved an ancient candle socket, ornamented with the figure of a lamb, which was formerly used for the yule candle

In Devonshire, a faggot of ash sticks was used instead of a log, it was bound together with nine rods from the same tree. The *ashton fagot*, as it was called, was dragged in with great rejoicings by the farm labourers on Christmas Eve, and placed in the large open hearth of the farm kitchen. For that evening all were on equality,—servants, labourers, master and mistress, fun and jollity, and all kinds of games and sports enlivened the evening, egg-hot (cider heated and beaten up with eggs and spices) was made and handed round to the guests.

The Waits are the itinerant musicians who parade the streets at Christmas time. The word *wait* means "wake" or "watch," and during the fourteenth and fifteenth centuries the waits were watchmen who sounded a horn to mark the hours of the night. Among Edward IV's household expenses, payment was made for a wait to pipe the watch within the court four times nightly from Michaelmas to Shrove Thursday. He was given a livery and an allowance of food, and was expected to guard the palace against thieves and fire From the early sixteenth century London and other chief boroughs had their corporation of waits The London waits, in picturesque uniforms, played before the mayor at the annual "Lord Mayor's Show." In the eighteenth century the ordinary street watchmen serenaded householders at Christmas time, and called round on Boxing Day to receive a gratuity for their services. When the watchmen were replaced by policemen as guardians of the city's safety, private individuals continued the custom of parading the streets with music at Christmas time.

A carol is a hymn of praise, especially such as is sung at Christmas time in the open air. The earliest sense of the word is "a ring dance," and in early times the "crib" set up in the churches at Christmas was the centre of a dance. Carolling, the combined exercise of dance and song, was formerly a pagan ritual. As early as the council of Toledo (A D 589) dancing in the churches on the vigils of saints' days was forbidden, but the practice was difficult to stop. The Christmas festival lent itself specially to gaiety, and for many years the "crib" of the Saviour was set up in churches and private houses, and carols were sung and danced round it. The institution of the "crib" is said to have been originated by St. Francis of Assisi to teach the doctrine of the incarnation, and in the West Riding of Yorkshire children still go round carol-singing with "milly-boxes" (My Lady boxes) containing figures to represent the Virgin and Child. Numerous carols of the fifteenth century have the characteristic features of folksongs. The earliest printed collection of carols was issued by Wynkyn de Worde in 1521 It contained the famous *Boar's Head* carol which, in a slightly altered form, is sung at Queen's college, Oxford, on the bringing in of the boar's head One of the most famous of the more modern carols is Charles Wesley's "Hark, how all the welkin rings," better known now as "Hark, the herald angels sing." Most of the best modern carols are derived from medieval Latin Christmas hymns. The French word for carol is *noël*.

Christmas decorations—It seems natural to use flowers and green boughs for decorating houses at Christmas time. The custom is a very old one, for the inhabitants of ancient Rome decorated their houses and temples with green boughs during their Saturnalia. Later, this custom was brought into the Christian church, and it will be remembered that Christ Himself entered Jerusalem over palm branches strewed in the way. The Jews used green boughs in their Feast of Tabernacles, and the Druids and Celts hung up mistletoe and green boughs

to gain the favour of the gods of the woods.

Holly, bay, rosemary, laurel and ivy are used for Christmas decorations. The ivy, however, is by some considered objectionable for church decoration as having anciently been sacred to Bacchus, and the mystic mistletoe is regarded as inappropriate in a church on account of its connexion with Druidical rites. Among the ancient carols many are written in praise of some of these evergreens, such as —

"The holly and the ivy
They both are now well grown
Of all the trees that are in the wood
The holly bears the crown."

A collection of old carols affords many instances of the love of the Christmas evergreens, and of all kinds of comparisons with the life and death of Christ The decorations must all be cleared away before February 2, (Candlemas Day, the Purification), it was considered unlucky to leave them longer. An ancient superstition held that if every remnant of Christmas decoration was not cleared out of the church before Candlemas there would be a death that year in the family occupying the pew where a leaf or a berry was left. Herrick thus alludes to the popular prejudice·—

"Down with the rosemary, and so
Down with the bays and mistletoe;
Down with the holly, ivy, all
Wherewith ye drest the Christmas hall,

That so the superstitious find
No one least branch there left behind;
For look, how many leaves there be
Neglected there, maids, trust to me,
So many goblins you shall see."

The superstitions of pagan times died hardly. One of the most interesting was the popular superstition that on Christmas Eve the Powers of Darkness had no evil influence on mankind. The cock was supposed to crow all night long, and by his vigilance to scare away all malignant spirits The idea is beautifully expressed by Shakespeare, who puts it in the mouth of Marcellus, in *Hamlet*—

"It faded on the crowing of a cock
Some say, that ever 'gainst that season comes
Wherein our Saviour's birth is celebrated,
The bird of dawning singeth all night long:
And then, they say, no spirit can walk abroad;
The nights are wholesome; then no planets strike,
No fairy takes, nor witch hath power to choose;
So hallow'd and so gracious is the time."

Christmas presents.—The beginning of the custom of giving presents at Christmas time is supposed to be connected with a story of St. Nicholas, the bishop of Myra, who lived in the fourth century A D St. Nicholas was famed for his goodness and his charity. He was greatly loved by the people, for he became the patron saint of children, girls, scholars, merchants and sailors Travellers going on journeys prayed for his help to guard them against robbers. You can tell how highly St. Nicholas was thought of in England for there are nearly four hundred churches dedicated to his memory Very little is known of his life but many interesting stories are told about him, and the following is, perhaps, the best·

Near the home of St Nicholas, at Myra, lived a poor nobleman who had three grown-up daughters. They were so poor that the father could not give a dowry to his daughters to enable them to get married, and at last the time came when there was nothing left in the house to eat. That night, as father and daughters sat talking together, St. Nicholas passed by, and through an open window he heard one of the daughters say to her father, "Let us go out into the streets and beg, for it is hard to starve." The father

sat deep in thought and greatly troubled. At last he answered, "No, no, it must not be Let us wait one more night, for it is harder to beg than to starve." Now St Nicholas was very rich, and when he heard these sad words he at once decided to help the poor family, but he did not want them to know who had helped them. The next night he returned to the house and through the window he threw a purse of gold which fell at the father's feet. There was great rejoicing in the family, and it was agreed that the purse should be given to the eldest daughter so that she might marry The next night St. Nicholas passed by again and threw a second purse through the window. This was given to the second daughter that she, too, might marry. All day long the father sat and wondered who could have had pity on them, and when night came again he sat close by the window and watched. Once more, St. Nicholas came to the window and as he threw a third purse into the room, the father caught the edge of his cloak. Then he saw who had been so kind to them St. Nicholas made the nobleman and his daughters promise to keep the story a secret, but somehow the story of the Saint became known and then the custom began of giving presents secretly on the Eve of St Nicholas's Day, December 6 Fathers and mothers put sweets and little gifts into the children's shoes, and girls and boys at school received gifts on St. Nicholas's Eve, and as time went on the custom spread till children looked forward with eagerness to receiving secret gifts on December 6. At length the day for giving presents was changed to Christmas Eve and now children in many lands hang out their stockings for the gifts of Father Christmas, who is really St Nicholas.

In most towns there is a shop which, so we are told, reminds us of the secret gifts of St. Nicholas. It is the pawnbroker's shop with its sign of three golden balls, which represent the three purses of gold which were given to the poor sisters.

Sometimes Father Christmas is called Santa Claus, which is an American form of the Dutch words for St Nicholas, for when the Dutch settled in America they did not forget the old custom of giving presents on Christmas Eve.

Christmas Poems

Christmas Eve

The following extract from Sir Walter Scott's *Marmion* gives a graphic picture of Christmas Eve in the olden time:—

"On Christmas Eve the bells were rung;
On Christmas Eve the mass was sung;
That only night, in all the year,
Saw the stoled priest the chalice rear
The damsel donn'd her kirtle sheen;
The hall was dress'd with holly green,
Forth to the wood did merry-men go,
To gather in the mistletoe
Then open'd wide the baron's hall
To vassal, tenant, serf, and all,
Power laid his rod of rule aside,
And Ceremony doff'd his pride.
The heir, with roses in his shoes,
That night might village partner choose;
The lord, underogating, share
The vulgar game of 'Post and Pair.'
All hail'd, with uncontroll'd delight,
And general voice, the happy night,
That to the cottage, as the crown,
Brought tidings of salvation down!

The fire, with well-dried logs supplied,
Went roaring up the chimney wide;
The huge hall-table's oaken face,
Scrubb'd till it shone, the day to grace,
Bore then upon its massive board
No mark to part the squire and lord
Then was brought in the lusty brawn,
By old blue-coated serving-man;
Then the grim boar's head frown'd on high,
Crested with bays and rosemary.
Well can the green-garb'd ranger tell,
How, when, and where the monster fell;
What dogs before his death he tore,
And all the baiting of the boar

The wassail round in good brown bowls,
Garnish'd with ribbons, blithely trowls
There the huge sirloin reek'd hard by
Plum-porridge stood, and Christmas-pie,
Nor fail'd old Scotland to produce,
At such high tide, her savoury goose.
Then came the merry maskers in,
And carols roar'd with blithesome din;
If unmelodious was the song,
It was a hearty note, and strong.
Who lists may in their mumming see
Traces of ancient mystery;
White shirts supplied the masquerade,
And smutted cheeks the visors made;
But, oh! what maskers, richly dight,
Can boast of bosoms half so light!
England was merry England, when
Old Christmas brought his sports again
'Twas Christmas broach'd the mightiest
ale,
'Twas Christmas told the merriest tale;
A Christmas gambol oft could cheer
The poor man's heart through half the
year"

King Olaf's Christmas

At Drontheim, Olaf the King
Heard the bells of Yule-tide ring,
As he sat in his banquet-hall,
Drinking the nut-brown ale,
With his bearded Berserks hale
And tall.

Three days his Yule-tide feasts
He held with Bishops and Priests,
And his horn filled up to the brim,
But the ale was never too strong,
Nor the Saga-man's tale too long,
For him.

O'er his drinking horn, the sign
He made of the Cross divine,
As he drank, and muttered his prayers;
But the Berserks evermore
Made the sign of the Hammer of Thor
Over theirs

The gleams of the fire-light dance
Upon helmet and hauberk and lance,
And laugh in the eyes of the King;
And he cries to Halfred the Scald,
Grey-bearded, wrinkled, and bald,
"Sing!

"Sing me a song divine,
With a sword in every line,
And this shall be thy reward"
And he loosened the belt at his waist,
And in front of the singer placed
His sword

"Quern-biter of Haken the Good,
Wherewith at a stroke he hewed
The millstone through and through,
And Foot-breadth of Thoralf the Strong,
Were neither so broad nor so long,
Nor so true"

Then the Scald took his harp and sang,
And loud through the music rang
The sound of that shining word,
And the harp-strings a clangour made,
As if they were struck with the blade
Of a sword.

And the Berserks round about
Broke forth into a shout
That made the rafters ring;
They smote with their fists on the board,
And shouted, "Long live the Sword,
And the King!"

But the King said, "O my Son,
I miss the bright word in one
Of thy measures and thy rhymes"
And Halfred the Scald replied,
"In another 'twas multiplied
Three times"

Then King Olaf raised the hilt
Of iron, cross-shaped and gilt,
And said, "Do not refuse;
Count well the gain and the loss,
Thor's hammer or Christ's cross,
Choose!"

And Halfred the Scald said, "This
In the name of the Lord I kiss,
Who on it was crucified!"
And a shout went round the board,
"In the name of Christ the Lord,
Who died!"

Then over the waste of snows
The noonday sun uprose,
Through the driving mists revealed,
Like the lifting of the Host,
By incense-clouds almost
Concealed.

On the shining wall a vast
And shadowy cross was cast
From the hilt of the lifted sword,
And in foaming cups of ale
The Berserks drank "Was-hael!
To the Lord!"

Longfellow

CHRISTMAS BELLS

I heard the bells on Christmas Day
Their old, familiar carols play,
And wild and sweet
The words repeat
Of peace on earth, good-will to men!

And thought how, as the day had come,
The belfries of all Christendom
Had rolled along
The unbroken song
Of peace on earth, good-will to men!

Till, ringing, singing on its way,
The world revolved from night to day,
A voice, a chime,
A chant sublime
Of peace on earth, good-will to men!

Then from each black, accursèd mouth
The cannon thundered in the South,
And with the sound
The carols drowned
Of peace on earth, good-will to men!

It was as if an earthquake rent
The hearthstones of a continent,
And made forlorn
The households born
Of peace on earth, good-will to men!

And in despair I bowed my head;
"There is no peace on earth," I said;
"For hate is strong,
And mocks the song
Of peace on earth, good-will to men!"

Then pealed the bells more loud and deep,
"*God is not dead! nor doth He sleep!*
The Wrong shall fail,
The Right prevail,
With peace on earth, good-will to men!"

Longfellow

THE MESSAGE OF THE BELLS

Ring out wild bells, to the wild sky,
The flying cloud, the frosty light.
The year is dying in the night;
Ring out, wild bells, and let him die

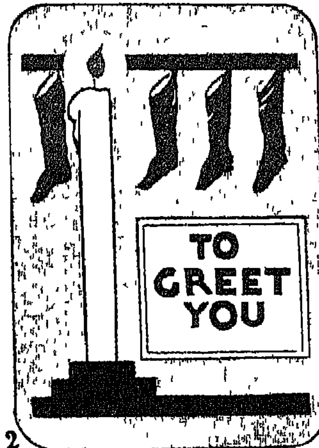
Ring out the old, ring in the new,
Ring, happy bells, across the snow.
The year is going, let him go,
Ring out the false, ring in the true.

Ring out the grief that saps the mind,
For those that here we see no more,
Ring out the feud of rich and poor,
Ring in redress to all mankind

Ring out a slowly dying cause,
And ancient forms of party strife;
Ring in the nobler modes of life,
With sweeter manners, purer laws

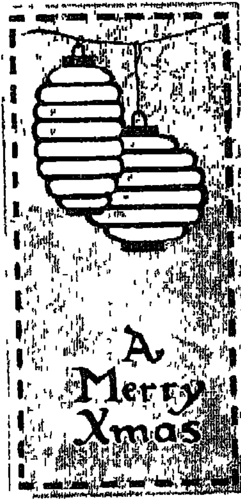
Ring out the want, the care, the sin,
The faithless coldness of the times;
Ring out, ring out my mournful rhymes,
But ring the fuller minstrel in

















Designing Christmas Cards

Ring out false pride in place and blood,
The civic slander and the spite;
Ring in the love of truth and right,
Ring in the common love of good.

Ring out old shapes of foul disease,
Ring out the narrowing lust of gold;
Ring out the thousand wars of old,
Ring in the thousand years of peace.

Ring in the valiant man and free,
The larger heart, the kindlier hand;
Ring out the darkness of the land,
Ring in the Christ that is to be.

From "*In Memoriam*," by *Alfred, Lord Tennyson.*

DESIGNING CHRISTMAS CARDS

Cut-out shapes of coloured papers.—Towards the end of the Winter Term, in the majority of schools the teachers set their pupils drawing lessons of a yuletide nature Great interest is taken by the children if they are allowed to design Christmas cards or calendars, which they can address to their parents or friends at the end of the term.

For this purpose four pages of suggestions for the designing of Christmas cards have been prepared. The cards are of a simple and effective character, the designing of which should cause the pupil little difficulty

As a drawing exercise, picture composition has no parallel, and it has the power of strengthening the observation of the children and of giving them some training in dexterity

It must be borne in mind that these Christmas cards given as examples for the teacher, and portrayed in black and white wash, are intended to be produced in bright colours. Colour fascinates, it is the music of art without which everything is lifeless.

The designing of these Christmas cards should help to stimulate the child's ability to harmonise simple colours effectively. For this purpose brightly coloured paper, including gold and silver, is invaluable, and many of the Christmas cards have been designed expressly to be carried out in cut-out shapes of vividly coloured papers.

The young pupils usually obtain better results with colour harmony this way than by using the brush only, as they can compare the toned papers together, and get a colour scheme that appeals to their taste before cutting out and making their design.

When doing pasted-down pictures of this type, the results are most successful if thin cardboard is used as the foundation. The cardboard will hold firm with the coloured papers pasted on to it, whereas a paper base would be found to cockle

For a paper-cut design, No. 8, Plate I, is ideal. It is of a very simple character which the youngest child could attempt successfully It would look well with a gold background, vivid green Christmas trees cut out and pasted on the gold, and with the central and largest tree and base cut in black paper. The wording "Christmas Greetings" can be painted in Chinese white on the black base as a finish.

It must be remembered that any additional painting on toned papers will not show up if ordinary water colours are used. Poster colours are the correct medium, but failing these, water colours mixed with Chinese white until they are opaque and fairly thick will serve quite well

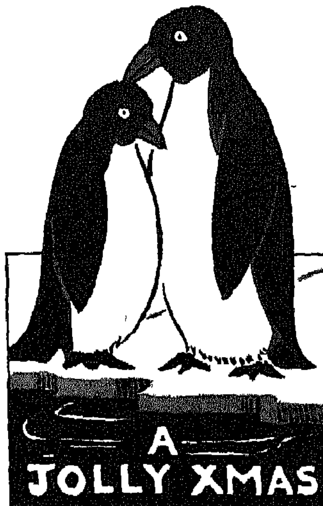
Nos. 1, 2, 5, and 6, can all be used as paper-cut designs or as ordinary drawings on toned paper

The three bells, tied with ribbons, of No. 1 design, would be very effective cut out of three shades of blue paper on a silver or gold background. The lettering could be a darker blue or black on a red ground. The snow and robin would be painted in afterwards.

The candle design of No. 2, is a simple one with rounded edges to the card. It would look well painted on a vermilion background—the stockings pale blue, the candle white with a black base, and the lettering on a gold oblong.

The lettering is not difficult and the pupil should be instructed not to draw it too large —a common failing with young designers







1a
THE ABOVE SHOWS FOLDED CARD COMPLETED FIGURE B. THE CUT AWAY PORTION AND FIGURE C THE DESIGN PAINTED BENEATH B.



CUT DESIGN ROUND HEAVY LINE AND TURN BACK TO STAND



FIGURE B

FIGURE C









CHRISTMAS CARDS AND CALENDARS FOR THE MORE ADVANCED PUPILS

"Block" lettering used in Nos. 1, 2, 4 and 8 should be the same width all round, with no narrow portions.

Script writing—taught in most schools—consists of lettering done with a quill pen cut with an oblique chisel-shaped tip The pen is held in one position and makes the thicks and thins of the letter without changing its direction. It is a quick and satisfactory way of writing. An example is shown in design No. 7.

If the pupils are very young and unable to do the lettering successfully, the teacher could supply them with printed Greetings to paste on their Christmas cards These can be bought at any stationer's in the shape of stars, oblongs or squares, with the wishes added. They are effective little bits of colour which are frequently used to seal down letters or parcels at the Christmas season. Other specimens of lettering can be obtained from the rolls of gummed coloured paper sold to decorate presents

By the same means, striking-looking borders for cards may be made. Holly designs and similar gay patterns which are sold quite cheaply in narrow, gummed rolls need only to be damped and pressed down in strips on the pencilled area to serve as the border of a design

With this kind of composition it is best to have only plain lettering in the centre of the card, as the coloured strips are usually of a very vivid nature and would look too gaudy if combined with a picture design as well. However, the decision rests with the teacher.

The lanterns of the "Merry Xmas" card are pieces of coloured paper stuck on a toned ground and outlined in black ink; a little touch of shadow is added to the left side of the lanterns. The other designs explain themselves.

Christmas cards and calendars for the more advanced pupils.—In designing Christmas cards the older pupils might try some cut-out effects. This type of work is illustrated in No. 1a, Plate II

The pupil draws and paints his design on a thin card which is folded in half, lengthways. Following the example given he draws the robin perched on the bough of a tree as shown in Fig B When this is completed, the white portions of the card are carefully cut away with a sharp knife; of course the wide margins at the top, sides and bottom are not cut, but are left for the greetings and to support the various branches of the tree which they touch Now the background must be designed (Figure C), and this is painted on the inside of the folded card, so that when the design is closed, the dark sky and snow scene will appear immediately underneath the robin and tree The sky should be black or a very dark blue, and to give a pretty effect the white of the stars and snow could be made to glitter by shaking on "frosting" powder while the white paint is still damp Bottles of "frosting," and gold and silver dust are obtainable from stationers' shops, and they give a very gay look to Christmas cards.

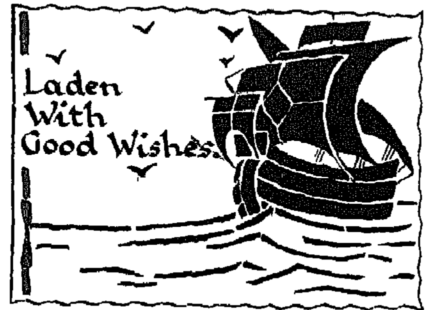
Many subjects can be treated in the cut-out style of No 1a; for instance, a cat looking out of a window, the window panes being cut away and a view showing through

The next design of two penguins standing on the ice is another type of cut-out. This design was drawn with a pencil line dividing the card in half All parts of the picture showing above the dotted pencil line are cut round with a sharp knife. It must be remembered only to cut round the design as shown by the thick lines in the small inset, and not on the dotted line When this has been done the top part of the card is folded back at the dotted line, and it makes a base on which the picture of the penguins stands erect.

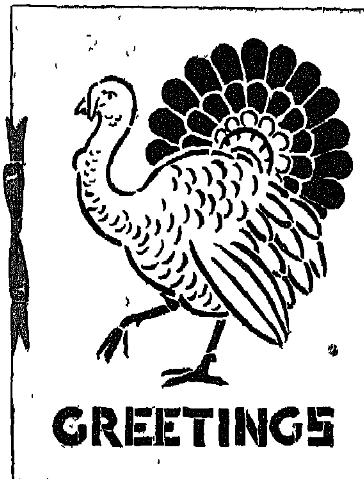
The design of the little girl with the plum pudding has been treated in exactly the same way; it looks very pretty painted in vivid colours

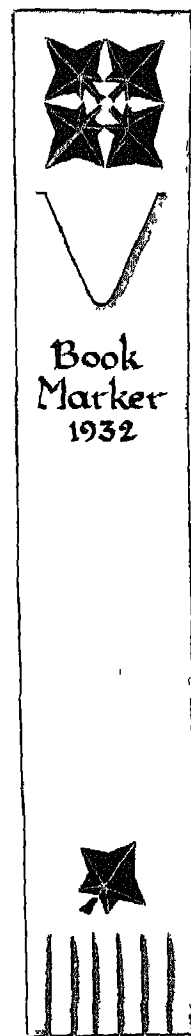
The polar bear makes a jolly little calendar. The smaller diagram shows clearly how the bear is designed with two sides and is then folded across the back to stand. This should















Stencilled Christmas Cards

be cut out of thin cardboard and it might be lightly varnished. If some of the older boys own fret saws a design like this could be easily carried out in three-ply wood. It could be painted in thick body-colour. Two or three coats would be needed and if the design is to be in colour the first wash must be in Chinese white Lightly varnishing the finished bear gives it a shiny appearance that is irresistible

If the calendar is cut out of wood the folded side would not be required, but would have a little block of wood gummed at the back behind the feet to keep it upright. Many other simple designs can be substituted in place of the bear, for example, a grey elephant, a dog, a rabbit or a cat.

For some of the calendars the animals may be made of coloured papers stuck to thin card and cut out. For instance, the little pig that went to market might be in pink paper with its eyes painted in black. A baby chick would be designed in yellow paper, and a hippopotamus in grey,—and so on.

The last two drawings on Plate II are two designs painted in the ordinary way on paper with no cut-out effect.

In the card with the Virgin and Child the background is of coloured paper with the drawing in a diamond shape pasted on top. The star on the right-hand side can be painted in yellow, and while still damp, sprinkled with frosting to give a sparkle. The lettering is added with a pen.

The reindeer card would be very attractive carried out with a red sky, brown reindeer, gold sleigh and variously coloured parcels.

Stencilled Christmas Cards. — Stencilled Christmas cards have an attractive style of their own, and the advantage of using this medium is that, once the labour of cutting the stencil is over, the pupil has the means of producing pictures quickly and easily without any further work than is necessitated by rubbing the fairly dry colour on the stencil.

Stencilling is not a new art, although it has made many converts during the last few years. This method of producing designs by cutting out shapes from paper or cardboard, and then laying the open shapes upon a surface and painting through them, was common among the Egyptians and Romans Many examples may be seen by visitors to the British Museum in the Egyptian section. Stencilling is carried out in Italy at the present day with so much care and refinement as to resemble careful hand-painting. It is used extensively to decorate furniture, walls and ceilings, and many beautiful effects are obtained this way

For school use the stencils should be cut out of very stiff paper, and if the same stencil is to be used many times, it is better to treat it with a little size or paint over the surface adding a thin coating of gum, for this hardens the stencil and prevents it breaking too quickly.

Soaking the paper with linseed oil is another good method to toughen it. For really satisfactory work the proper paper for cutting stencils should be bought from an Art dealer. It is quite cheap.

The first design of our suggestions for stencilled Christmas cards is a little snow-covered house complete with fir trees For this picture two separate stencils are needed. The pupil draws the design and then traces it on to the stencil paper and cuts out the shapes to represent the white areas

The fir trees, hedge and black fence must not be cut on this stencil, but traced in their right places on another stencil paper and then cut out. If the outside margins are kept exactly the same size in both stencils, no worry need arise that the fir trees will not appear in their right places when the paint is applied.

A coloured paper is used as a background, and the first stencil is laid on and painted in white. When this is dry the second stencil is placed over the card, and the fir trees are rubbed on in black or dark green The lettering is finally added with a pen.

"Laden With Good Wishes" is an effective stencil of a ship, and may be carried out as a single stencil, or a second stencil may be

added to make the sea in a contrasting tone to the ship The edges of the card on which this is designed are cut with scissors to give a jagged effect.

"A Merry Christmas" was designed for two stencils and would look well on a gold or silver ground with the horseshoes and double border lines in pillar-box red, and the holly and mistletoe leaves in vivid green (a separate stencil is needed for this). The lettering is added with a pen when the rest of the design is dry. Another colour scheme would be blue ground, gold horseshoes and red leaves.

The turkey design should prove popular, as it looks very effective when completed Instead of doing this in one colour the pupil could rub on red for the head, and blue, grey and green for the feathers. Separate stencils would not be needed, as the colours merging would add to the colourful effect of the bird Again, the turkey could be stencilled in one colour, say black, on a piece of decorated paper, the type that is patterned with small holly leaves and is used to pack up presents. In this design the lettering is intended to be cut in the stencil also Care must be taken to make the "ties" strong enough to hold the letters.

The "Xmas Wishes" design is stencilled on white paper which is then stuck on a coloured ground to which the lettering is added with a pen

Making bookmarks is a different kind of gift, and appeals to the children, insomuch as it seems more like a present than a greeting only. The bookmark design is a simple one of four ivy leaves stencilled together to form an easy pattern

The last design is an attractive calendar, divided into four sections to represent the seasons.

HANDWORK NOVELTIES

Children take great delight in working toys of any kind and especially in those which they are enabled to construct and afterwards play with The handwork lesson provides an excellent opportunity for such a purpose, and while such projects may not be included as part of the course, there are occasions when such exercises may be prepared with advantage. For Christmas time such examples of the lighter side of the handwork lesson afford great pleasure and prove very attractive and interesting. To meet such requirements a few suggestions are appended with a Plate of illustrations: a little reflection will show that the models depicted may be multiplied in a variety of new forms and produced in varying media according to the resources available.

1. *The lopping rabbit* Make a drawing of a rabbit in a prone position on a piece of stiff cardboard 3 in. long and 2 in. wide, and cut it out carefully round the shape. Cut out two hexagonal wheels from a circle about ½ in in diameter: fix these by means of an axis made of a prepared match stick, just behind the fore-paws, so that one side of the hexagon is well below the level of the model: as the wheels revolve the rabbit will move with a characteristic lopping effect. Very comical effects can be obtained by placing the axis of such models out of the wheel centre.

2 *The pecking duck.* This is an action figure fastened to a movable frame made of parallel strips of cardboard or light wood· the strips are held in a movable position by clips or eyelets fastened to the legs of the figure and the trough By moving the upper strip to and fro the duck will tilt forward and upward suggesting the action of pecking from the trough.

3. *The spinning disc.* Cut out a circle about 4 in. in diameter from stiff cardboard pierce holes about ½ in apart equidistant from the centre along a diameter Eyelets placed in these holes will make the toy more durable and effective Connect a string about 2 ft. long through the holes. The disc can be decorated by circles of colour or a colour wheel can be made by painting equal sectors of the colours of the spectrum.

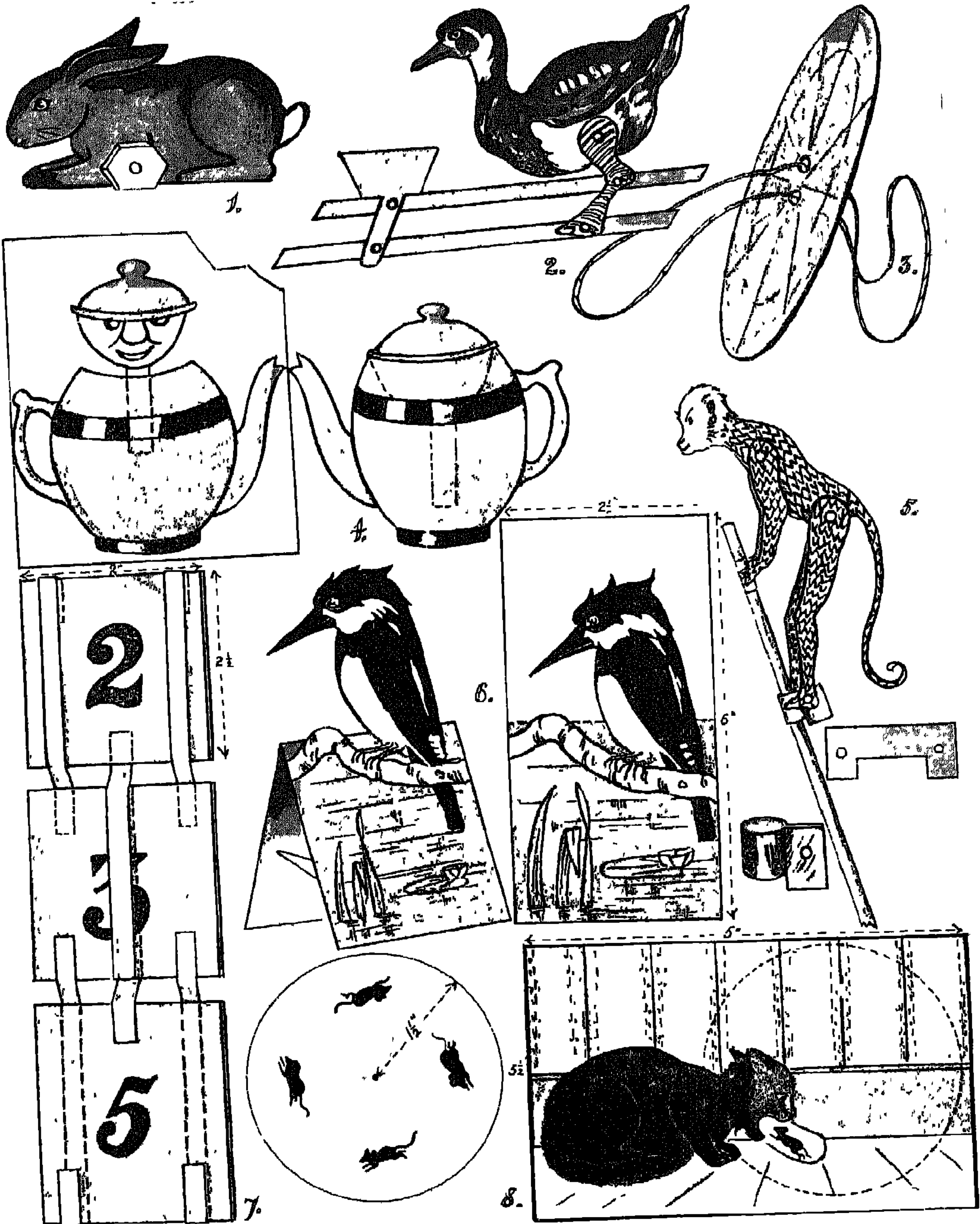
4 *A comical teapot* Draw a teapot without a lid on a piece of cardboard 6 in. square · on a separate card 3 in by 2 in. draw a lid to fit the teapot adding the shape of a face below the caplike lid, and a strip ½ in. wide and long enough to fit the length of the teapot with clearance at the bottom. Care must be taken that the lid fits the teapot exactly so that the face and strip will be hidden. Draw a band across the teapot about level with the top of the handle: cut these shapes out carefully and adjust the lid of the teapot so that the strip lies across the band mark its position and cut slits on the lines of the band equal to the width of the strip; other slits may be added below the band to secure the position of the sliding lid. The teapot can now be realistically coloured, and a comical face drawn on the shape under the lid On pushing the strip up and down, an amusing face with a teapot lid hat is seen to peep out of the pot and disappear again

5 *The climbing monkey.* This cardboard action figure of a monkey is jointed only at the hips and shoulders. Prepare a circular stick and two collars of flexible cardboard, one to be fixed tightly near the top of the stick and the other to be made to slide loosely along the stick: the latter is made from a strip having a holed rectangular flange at each end Fix the hands of the monkey to the fixed collar and the feet to the movable collar, where the holes are placed, by means of clips or eyelets A simple wash of colour can be placed on the stick, and the monkey can be decorated as the children fancy.

6. *A folding picture.* Upon a card 6 in. long and 2½ in. wide draw a picture similar to that shown in the Plate in which the top half—indicated by a dotted line across the card—shows a part of the picture which can be conveniently cut from its surroundings. The card can then be folded back leaving the cut-out part of the picture standing clear, while the card from which the picture has been cut forms an effective stand. Many similar devices can be treated in this way for greeting cards or advertisement novelties

7. *Folding blocks.* These are made from pieces of stout cardboard or plywood 2 in wide and 2½ in. long, and will require about 2 yd of ½ in. tape. the blocks are numbered on both sides 1–2, 3–4, 5–6, or they may be lettered or decorated The tape is cut into lengths of 3½ in. and fastened carefully at their extreme ends with glue or small tacks, as shown in the diagram · it is important that the tapes should be placed at exact distances from the sides of the blocks and those at the centre correctly placed on each side of the axis, or the blocks will be one-sided Other blocks may be similarly added, and much good fun obtained by making the blocks fall open from various positions, or by dexterously folding, turning and opening to guess what number, letter or picture will appear

8. *The cat and the mice.* This is one of the many models which can easily be made with the aid of a circular disc revolving behind a card containing an aperture for the appearance of characters on the disc Take a piece of cardboard 5 in. wide and 3½ in in depth and prepare a circular disc 3 in in diameter place a circle on the disc 1 in from the centre and draw a series of mice on this circle running clockwise Fix the disc on the back of the card by means of an eyelet, towards the right-hand side, taking care that it does not show from the front At a distance of 1 in. from the eyelet seen on the front, in the position of 7 o'clock, make an aperture with curves following the circle of the disc, through this opening the mice will appear as the disc is revolved Draw a level line on the card across the opening where the mice appear, to represent the floor line. Now complete the picture by drawing the cat waiting at the hole with wide open mouth, the skirting of the room and the paper on the wall · the picture should be coloured to make it realistic and toy-like In the same way the children can invent projects such as birds appearing and disappearing from a cage, chicks coming out



Handwork Novelties

1 The Lopping Rabbit
2 The Pecking Duck
3 The Spinning Disc
4 A Comical Teapot
5 The Climbing Monkey
6 A Folding Picture
7 Folding Blocks
8 The Cat and the Mice

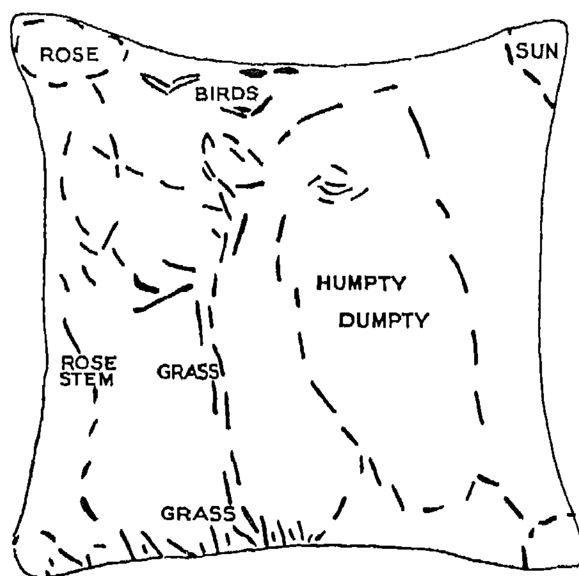
of shells, frogs jumping over a mushroom, and so on.

CHRISTMAS PRESENTS IN DECORATIVE NEEDLEWORK

I. Presents to be made by children of seven and eight years of age.

The stitches and methods of construction used for the presents illustrated on Plate V have been dealt with in the First Year's Course of Decorative Needlework (Volume II., page 585). The snake string illustrated at Fig. 2 will be done by plaiting, which, in all probability, will have been learnt in connexion with some other form of handwork. In the work of Decorative Needlework for children in their eighth year, several articles that can be made fairly rapidly are described, these would also be suitable for Christmas presents. They are: a tray cloth in huckaback stitch, a handkerchief sachet and a hat band.

Learning to sew on a pincushion.—As Christmas-time draws near, most children are seized with a desire to make presents for various relatives and friends Their efforts, no matter how crude, will be prized by the recipients. Fig. 1. Plate V. shows what can be done by a little girl of seven who has only just come to school and cannot sew She was shown how to hold her needle and how to use her thimble She was then told to stitch on the material wherever she pleased and to make what she liked with her stitches Imagination immediately came to her aid. Figure 1A shows a rough draft of the pincushion as it came into being First she put a pink rose with a brown stem and green leaves on one side of the square—a conventional thought, but her first and last Next, sections of circles were put in the two empty corners—empty corners appeared to vex her eye. Then Humpty Dumpty, in all his glory, came into being, with an eye and a pipe, then grass and birds to finish the picture This small person is now busily engaged at home on another effort of a similar nature, which should be very interesting as she steadfastly refuses help and has already arrived at a method of turning down a raw hem



Rough Draft of the Pincushion (Fig 1A)

The following classroom tools and materials will be needed. Pieces of soft linen, casement cloth or unbleached cotton

Ordinary sewing needles, No 5, with large round eyes.

D M C *coton à broder* in a few strong colours

Sewing cotton to match the material.

Tacking cotton. Thimbles

Large cutting-out scissors. Small scissors for cutting threads.

Sawdust or bran for stuffing pincushions.

Some of the comments made by my youthful helper may be useful, so I will quote her words in their appropriate places.

PLATE V

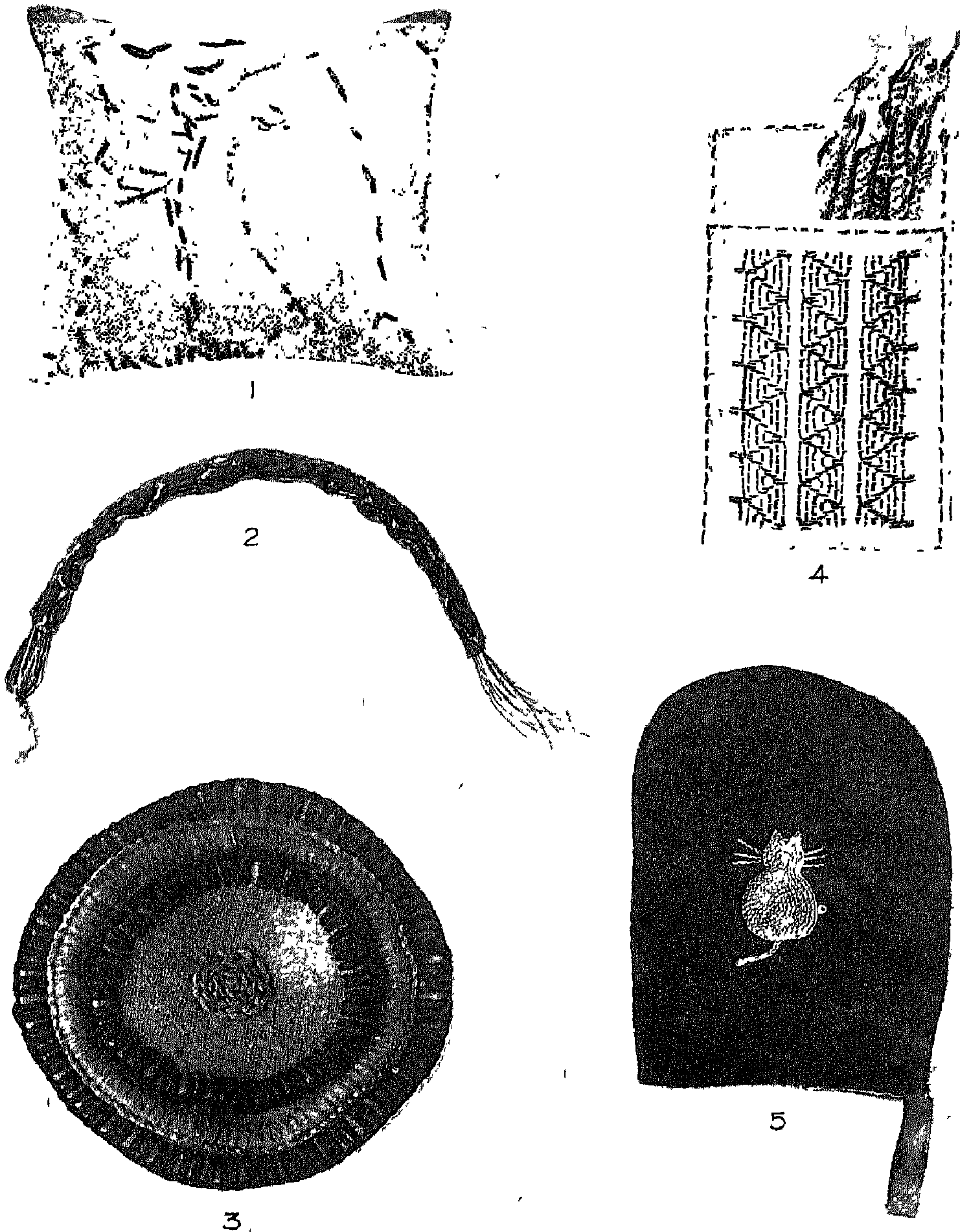


FIG 1 LEARNING TO SEW ON A PINCUSHION
FIG 2 A SNAKE STRING
FIG 3 A SIMPLE NEEDLE BOOK
FIG 4 A SPILL HOLDER
FIG 5 A COAL GLOVE

She sat a couple of yards away from me and kept up a running conversation, in which were blended imaginative ideas taking shape under her needle with comments on the procedure. I was sewing also and looked at her work only when invited to do so

The pincushion illustrated in Figure 1A is called a "Learning-to-Sew" pincushion; although it might well be called in many circumstances a "Learning-to-use-the-Thimble" pincushion This is an exercise for which there is a most urgent need in the early stages of needlework. Its mastery would lead to better results as well as to more rapid technique, for in exercises of this character the children develop real skill with their tools The linen for the pincushion is 5 in square, with a tacking ½ in. from the edge all round. The young worker is requested to keep her stitchery within this boundary. I will now return to my youthful helper When the use of the needle and thimble showed signs of soon becoming a habit, conversation started on general subjects, interspersed with, "I keep on forgetting my thimble," followed by, "I must do a lot of thinking," and "You want to get the stuff comfortable in your fingers." Then in a riot of imagination came Humpty Dumpty and, vehemently stemming the tide of eloquence which accompanied his creation, the sage remark. "If a person stands beside you, you cannot do it. You look up They are nosey! Nosey Parkers!" Then, "If you do three or four stitches at once you get done quicker, and (wonderingly) the stitches are nicer."

The length of thread used needs to be shorter than for usual practice The length of thread provided by the ordinary opening of a skein of D M.C, if cut in half, makes a length that a child of this age and skill can handle easily The boundary tacking line is very necessary, as the extreme edge of the material appears to have an uncanny fascination for the beginner

When the decoration is finished, another piece of material of the same size must be cut for the back of the pincushion Three sides of the cushion are then joined together with running and occasional back stitches. The pincushion should be stuffed and the fourth side neatly top-sewn

A snake string.—A snake string is illustrated in Figure 2, Plate V. This article is very simple to make and is most attractive and useful. It holds two yard lengths of string, which are easily drawn out of the holder and are sufficient for tying up ordinary sized parcels. The only stitches needed are decorative tacking stitch and hemming.

A large safety pin must be added to the tool pochette.

The following classroom tools and materials will be needed·

Fancy ribbon, 1½ or 2½ in wide, or braid or tape 1½ or 2½ in. wide

D M.C. *coton à broder* in strong colours

Coloured string in about three colours.

Sewing cotton to match the ribbon or braid.

Tacking cotton.

Medium sized scissors.

No. 5 or 6 sewing needles.

A snake string can be made with either fancy ribbon, braid or tape, decorated with stitchery such as darning, or by a design worked in chain stitch.

The ribbon or braid needs to be ¾ yd. long if its width is 2½ in., or 1½ yd long if its width is 1½ in. If the wide ribbon or braid is used, narrow hems are turned on the ends of the ribbon and then hemmed down neatly. The ribbon is then folded in half lengthways and the selvedges are tacked together. If the narrow width of ribbon is used the 1½ yd. length is cut in half, and hems are made on all four raw ends. When the hems are finished, the two lengths of ribbon are laid over each other with the right sides outside. The ribbons are tacked together along the selvedges, leaving both ends open In both cases the sides are joined with decorative tacking stitches, if the wider ribbon is used the fold is tack stitched so that both sides may match. If hand decorated braid is used,

the method of construction is exactly the same as for ribbon

The string to fill the holder is cut 2 yd. long, sufficient string must be used to prevent the holder from dropping off, as the string is not in any way attached to the holder The lengths of string are gathered together and threaded through a closed safety pin Care should be taken that all the ends of the string fall together, the folds will lie together in the safety pin. Use the safety pin like a bodkin to draw the strings into the holder, leaving the safety pin in place until the plait for hanging up the snake string is made. From the coloured string make a plait about ¼ in wide and 8 in long Slip the plait through the loops of the string and take out the safety pin. Knot the plait twice, once to join the ends together, and a second time near the loops of the lengths of string.

A needle book.—An easily made needle book is shown in Figure 3, Plate V This article requires blanket, chain and herring-bone stitches

There are no additions to the tool pochette.

The following classroom tools and materials will be needed:

Pieces of coloured flannel
Coloured embroidery wools.
Large cutting-out scissors
Wool needles.
Cotton to match the flannel.
Compasses. Carbon paper.
3H pencils. Thin drawing paper.

The needle book is made from three circles of flannel with diameters of 4 in., 3½ in and 3 in. respectively

Circles of these sizes are drawn on paper with compasses, and then traced on to flannel, using carbon paper and a hard pencil. The papers on which the circles have been drawn will need to be pinned firmly to the flannel with drawing pins, to prevent them from slipping out of place If the flannel used is inclined to fray badly, a narrow hem is herringboned down on the wrong side before blanket stitching the edges If the flannel is firm, the raw edges themselves may be blanket stitched

When the blanket stitching is finished, the three circular pieces are placed one on top of the other, and fastened together in the centre with a small circle of chain stitching Care must be taken that the chain stitches go through all three thicknesses of flannel

A spill holder.—Figure 4, Plate V shows a spill holder The stitches used are decorative tacking stitch, huckaback stitch, hemming and top-sewing

There are no additions to the tool pochette.

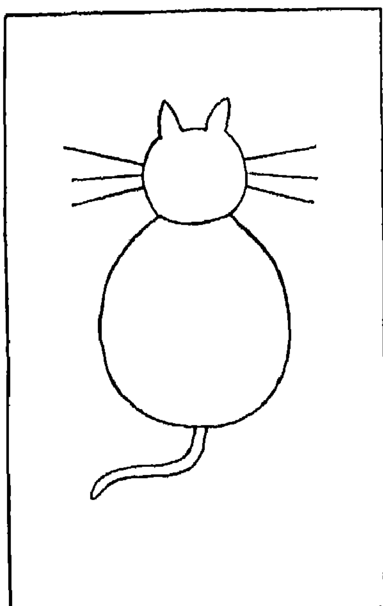
The following classroom tools and materials will be needed:

Huckaback.
D.M C. *coton à broder* No 12 in strong colours.
White sewing cotton Tacking cotton.
Blunt rug needles. No 6 sewing needles
Large cutting-out scissors.

The spill holder is made from a piece of huckaback measuring 8 in. by 5 in. A very narrow hem is turned down all round the piece of material and is tacked into place The corners are neatly hemmed and top-sewn.

The decoration on the pocket starts and finishes ½ in from either end; hence, as the pocket is 5½ in. deep, the decoration measures 4½ in. A pattern should be chosen from the sampler, and executed with due regard to the limits imposed by the construction of the article.

The hem is finished with a single row of decorative tacking At the back of the pocket, the long stitch must be reversed to a short one, otherwise the top of the holder will show the short stitch instead of the long stitch on the side of the flap that is exposed to view. When the hem is finished, the pocket is folded over 5½ in, and the sides are top-sewn together, working from



Cat on Back of Coal Glove
(Fig. 5A)

the opening toward the fold. When it has been pressed the holder may be filled with paper spills.

A coal glove.—Large fires, like presents, are associated with Christmas, so the coal glove illustrated in Figure 5, Plate V., will be a welcome present. The stitches used are chain stitch, stem stitch, run and back stitch, herringbone and slip stitching.

There are no additions to the tool pochette.

The following classroom tools and materials will be needed:

Black velvet. Black sateen

D M C. *coton à broder*, in strong colours.

Black sewing cotton. Tacking cotton.

No. 5 or 6 sewing needles. Large cutting-out scissors.

White tracing paper. Thin drawing paper.

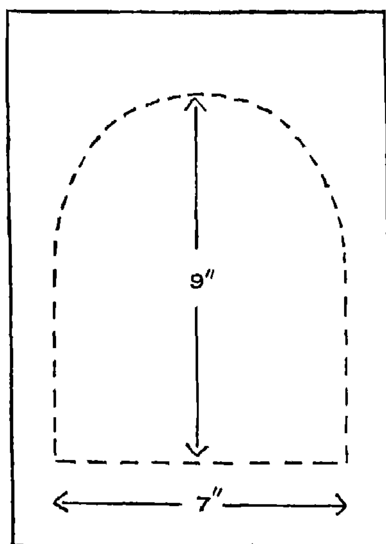
White water colour paint. Paint brush.

HB and 3H pencils

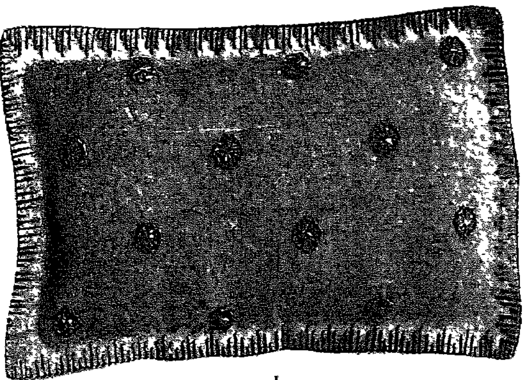
A piece of velvet and a piece of sateen, each measuring 9 in. by 7 in., are needed for making the coal glove. Few materials are as suitable as the two mentioned above, as closely woven materials are needed which will not allow coal dust to percolate through their texture and soil the hand on which the glove is worn.

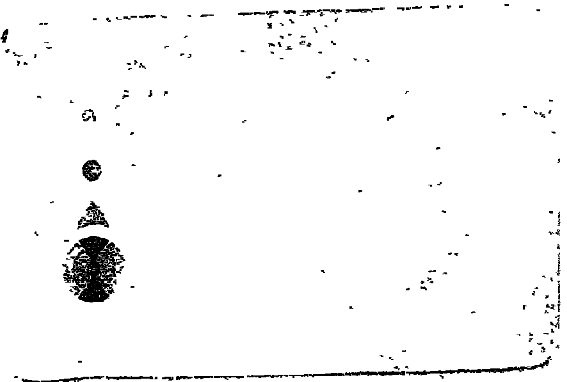
The cat (see Fig 5A) or some other suitable simple device is worked in chain stitch on the velvet, which will form the back of the glove. The cat is traced on to the velvet with white or red tracing paper, this tracing is not lasting and it will be necessary to go over the tracing with white water colour paint The body of the cat is worked in solid chain stitch, starting from the outside and working inwards. Any strong coloured embroidery cotton may be used. The cat's whiskers are executed in stem stitch.

When the embroidery is finished, the velvet and sateen are cut out in the shape indicated in Figure 5B. The two pieces are firmly stitched together round the curved sides and this stitching is done on the wrong side. The two raw edges are turned down one on either side of the seam, and one herringboned into place. A narrow hem is made round the wrist opening on both materials, and is neatly hemmed. A small piece of sateen measuring 4 in by $1\frac{1}{4}$ in.



The Pattern for the Coal Glove
(Fig 5B)







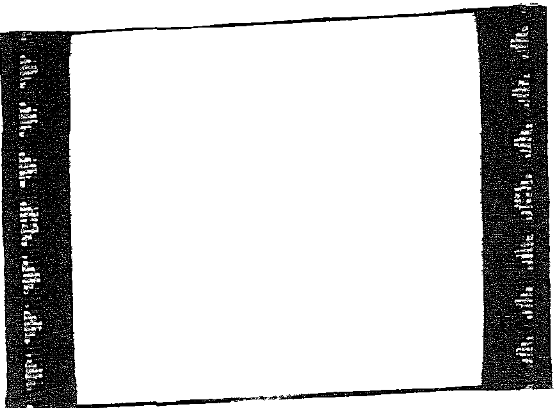


FIG 1 A LAVENDER SACHET MADE IN ORGANDIE
FIG 2 A TRAY CLOTH DECORATED WITH CHAIN STITCH
FIG 3 A HANDKERCHIEF EMBROIDERED IN ONE CORNER
FIG 4 A DECORATED BLOTTER

is folded and stitched together to form a hanger, which is then sewn on at the seam on one side of the glove

II. Presents to be made by children of nine years of age.

On the Christmas gifts in this year's work are employed stitches and methods of construction that have occurred in the ordinary work in Decorative Needlework for children in either their eighth or ninth years, the only exception being the finish used on the handkerchief. The edge of the handkerchief is finished with a roll-whip hem, as this makes a dainty edge. Roll-whip hemming will probably have been learnt elsewhere in the needlework course. The decorative stitch used on the handkerchief is split stitch, a stitch which is generally executed in wool or silk This stitch was used previously for the decoration on a belt. On the handkerchief, split stitch is done in cotton, this stitch being preferable to chain stitch, as it requires less thread and so is useful on a light-weight material. Articles suitable for Christmas gifts which occurred in the ordinary work are· the face cloth, the toothbrush holder and the book carrier Several other articles are suitable, but they would take longer to make and would need to be started early in the term

A lavender sachet.—An organdie lavender sachet is shown in Fig. 1. Plate VI. The stitches used are: graduated blanket stitch, buttonhole stitch, running and back stitch.

There are no additions to the tool pochette.

The following classroom tools and materials will be needed.

Organdie, muslin or voile.

D.M C. *coton à broder* in colours that look pleasing with the material.

Sewing cotton to match the material.

Tacking cotton

No. 5 or 6 sewing needles.

Large cutting-out scissors.

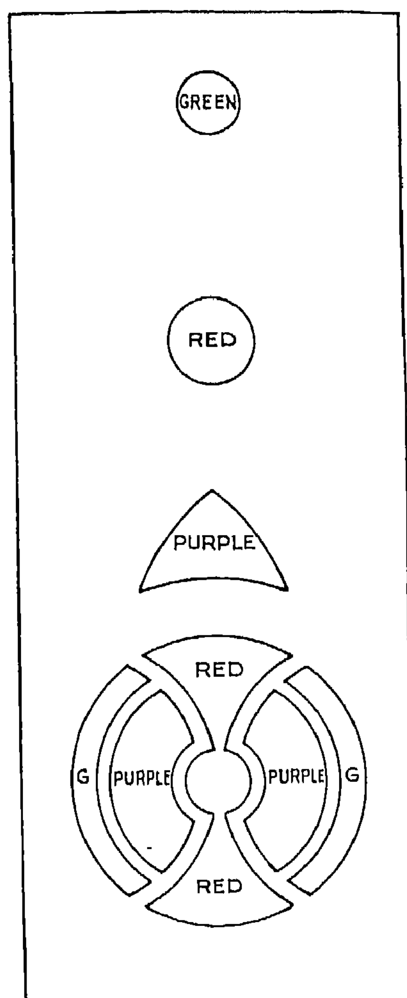
Lavender.

Used carbon paper. Squared paper

HB and 3H pencils

The size of the tray cloth depends upon the needs and wishes of its prospective owner The one shown in the photograph measures 18 in. by 11 in It is made of natural linen and is bound with apple green linen The design is executed in chain stitch in apple green, purple and red.

The tray cloth should be cut out by measuring and drawing threads. The binding round the edge is put on before any decora-



DESIGN FOR TRAY CLOTH (FIG 2A)

tion is attempted. The method of putting on binding is described in Lesson IX in Volume III. page 684.

A design is worked out on squared paper and transferred to the tray cloth with carbon paper, using a hard pencil. As the design is to be executed in chain stitch, it would be well to remember that curved designs, rather than those angular in character, are easiest for children to execute in this very flexible stitch The chain stitching must start from the outside of the design and work towards the centre. Figure 2A shows the design used on the tray cloth.

When the decoration is finished, the work will need pressing from the wrong side, using a damp cloth over it.

A lawn handkerchief.—A lawn handkerchief decorated in one corner is shown in Figure 3 The stitches used are split stitch, and roll-whip hemming

There are no additions to the tool pochette

The following classroom tools and materials will be needed:

Coloured lawn or some similar material

D.M C. *coton à broder* in clear colours

D.M.C sewing cotton to match the material chosen.

Nos 5 and 6 sewing needles

Large cutting-out scissors.

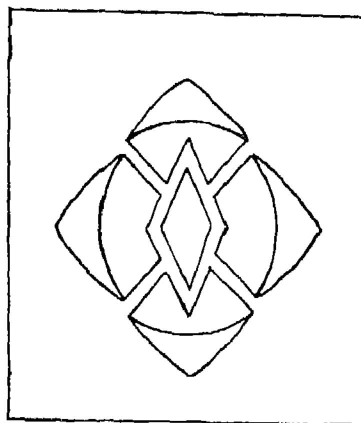
Used carbon paper. Squared paper.

HB and 3H pencils Compasses

The handkerchief is made out of a piece of lawn 12 in square Threads are drawn to cut by, for if the sides are not quite on the straight of the material, it is more difficult to make a roll-whip hem.

The four sides are roll-whip hemmed before the design is worked in on one corner of the handkerchief.

The design is prepared on squared paper and transferred to the handkerchief with carbon paper, using a hard pencil. Fig. 3A shows the design for the handkerchief. As the design is to be executed in split stitch, curved designs similar to those advised for the tray cloth are also best for the handkerchief. The stitchery should start from the



DESIGN FOR HANDKERCHIEF (FIG 3A)

outside and work inwards, as for chain stitch. The work will need pressing from the back, using a damp cloth over it

A blotter.—A blotter, decorated with needle weaving is shown in Figure 4, Plate VI It is of a size that will hold half sheets of blotting paper The size can of course be varied to suit different needs. The stitches used are hem stitching, needle weaving, herringboning and top-sewing.

There are no additions to the tool pochette.

The following classroom tools and materials will be needed

Coloured hessian.

No. 3 D M C *coton perle* in strong colours.

No 8 D M C *coton perle* to match the hessian

Strong cardboard Blotting paper

Large cutting-out scissors

Blunt rug needles. No. 5 or 6 sewing needles.

Tacking cotton

The blotter illustrated in the photograph is made of brown hessian. The needle weaving is executed in cream and green *coton perle*

A piece of hessian measuring 25 in. by 13½ in. is used for making the decorated cover for the blotter The method of construction is exactly the same as for the needle-woven runner in Lesson XI, Volume III

Ten threads are drawn 2¼ in from the ends of the strip of material, and the hem is tacked up to make a hem 1 in. wide when finished. After the hem is hem stitched, 1 in. is turned down along the two long sides and herringboned into place. A needle-weaving pattern is chosen from the sampler and executed on the hem. If ten threads are withdrawn at the hem, approximately twenty-four strands (two each way forming one loop at the end of a bundle of threads) will fill the space. That is, twelve rows of weaving will appear on the right side.

The folds at the ends of the blotter that hold in the cardboard measure 2½ in. This amount is folded over at each end, and the sides are top-sewn together. The cover then measures 18 in. by 11½ in. A piece of cardboard 18 in. by 11½ in., the size of half a sheet of blotting paper, is slipped under the folds, and blotting paper of the same size is placed on the top

A lavender sachet.—A lavender sachet may be any shape and, within reason, any size The one shown in the photograph is made from two rectangular pieces of material, measuring 7 in by 5 in. The piece which is to form the top of the sachet may be embroidered with "free design,"—see Lessons V. and VI., Volume III, pages 676 and 679. Use is made of Lesson VI for the sachet illustrated. Evenly spaced dots were traced on to the organdie, and little buttonhole-stitched flowers were worked, using the dots as the centres of the flowers The top will need pressing when the decoration is finished. The two pieces of material are placed one on top of the other, with the right sides facing inwards, and are tacked ¼ in from the edge. Three sides of the bag are then run together, taking occasional back stitches. Turn the bag on to the right side and blanket stitch the same three sides, using graduated stitches. When these three sides are blanket stitched, the bag is filled with lavender The fourth side is pinned together, turning in ¼ in, this side is run and back stitched together on the right side to keep in the lavender. The stitching on the right side is covered with blanket stitch, to match the other three sides.

A tray cloth.—Figure 2 shows a small tray cloth, with a design placed up one side. The stitches used are: chain stitch, running stitch, back stitch and slip stitch.

There are no additions to the tool pochette

The following classroom tools and materials will be needed.

Linen, crash, casement cloth or some similar material

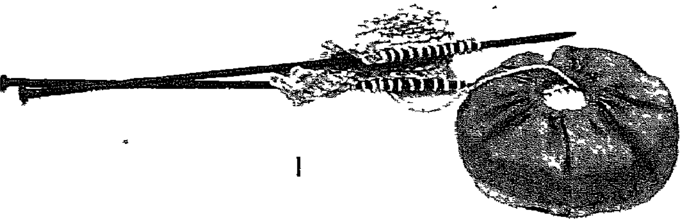
D.M.C. *coton à broder* in clear colours
Sewing cotton to match the material
Tacking cotton.
No. 5 or 6 sewing needles
Large cutting-out scissors
Used carbon paper Squared paper
Compasses. Rulers. HB and 3H pencils.

III. Presents to be made by children of ten years of age

The stitches and methods of construction used in the Christmas gifts for this year have all occurred in the Decorative Needlework of previous volumes, except in one instance: the method of construction used for the ball holder is new.

In the former course a few articles occurred which might also be used for Christmas presents These are: the cushion cover in huckaback, mats executed in solid buttonhole stitch and a decorated collar Several other articles would also be suitable, but they entail more work and would need to be started early in the term.

A ball holder.—A ball holder is illustrated in Figure 1, Plate VII This holder may be used for string, wool or crochet cotton It has an opening at the side through which the ball is inserted The photograph shows the holder being used for knitting The stitches employed are: darning, slip stitching, tack stitching and top-sewing.



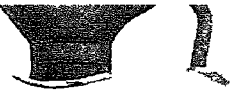






Fig 1 A Ball Holder
Fig 2 A Cover for a Hot Water Bottle
Fig 3 A Guest Towel Decorated with Appliqué
Fig 4 A Decorated Modesty Vest

There are no additions to the tool pochette

The following classroom tools and materials will be needed:

Linen, crash or some similar material.

D.M.C. *coton à broder* in strong clear colours.

Sewing cotton to match the linen. Tacking cotton.

Large cutting-out scissors. Dress fasteners.

Curtain rings 2 in in diameter (small ones are difficult to handle).

Cardboard. Squared paper. HB pencils.

The method of decoration used on this gift is exactly the same as that used on the travelling pochette (Volume III, page 667). Patterns made while working on that lesson can be used for this gift or fresh ones may be worked out on squared paper.

The linen for the holder measures 16 in. by 6 in. for the sides of the bag, and two circular pieces of 3½ in. diameter for the base on which it stands.

The band of decoration is placed in the middle of the strip of material, starting and finishing 1 in. from either end The plain piece at the ends is for making a hem on the opening The hems are of a width that is gained by turning down hems to use up all the plain material left. That is, in the top hem, the decoration will come to the extreme edge, so that the pattern may match when the holder is closed. The material for the bottom hem must be folded to make a small flap for the top hem to go over. The hems must be slip stitched neatly and a dress fastener sewn on in the middle: that is, one half of the fastener exactly in the middle of the band of decoration on the top hem; but care must be taken not to let the stitches come through on to the right side The other half of the fastener is sewn on to the flap on the bottom hem. When the fastener is closed, the band of decoration should meet exactly and show no plain material, in other words, it should give the effect of a continuous band.

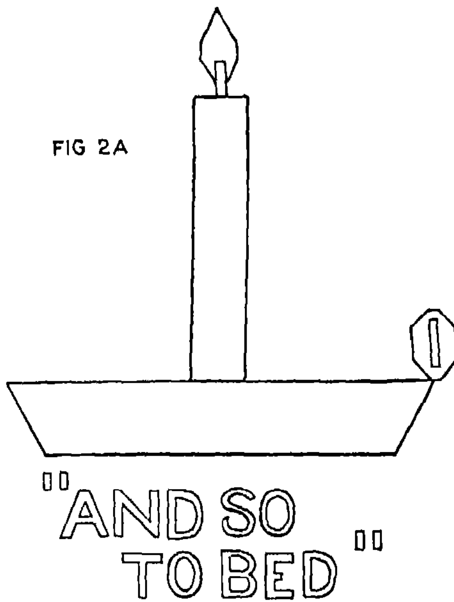
At this stage the work must be pressed as, after the next stage, pressing will be impossible.

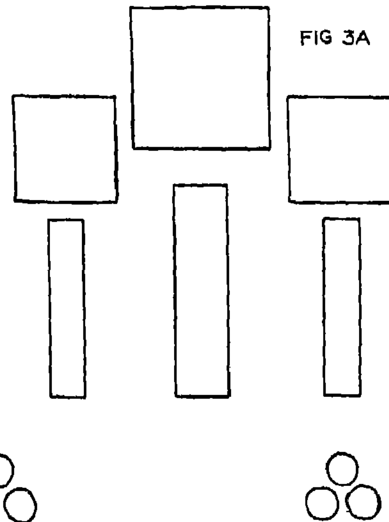
A circular piece of cardboard 2½ in in diameter is used for the base. This is covered with a circle of material of 3½ in. diameter. Top-sew the material loosely round the edge, place the cardboard inside the circle of material, and draw the threads gently till the material is tight round the cardboard. A few stitches taken from edge to edge of the material across the cardboard may be necessary. The bag is gathered round the bottom, ⅛ in. from the edge, except across the opening. Pin the opening in position on the covered cardboard. Draw up the gathers, arrange and pin them evenly round the cardboard. The gathers are top-sewn to the edge of the material on the cardboard to keep them in place The holder at this stage is inside out. The second circle of material is turned in ⅛ in. all round, and tacked. It is then pinned on to the covered cardboard so as to cover all the raw edges, and slip stitched on firmly.

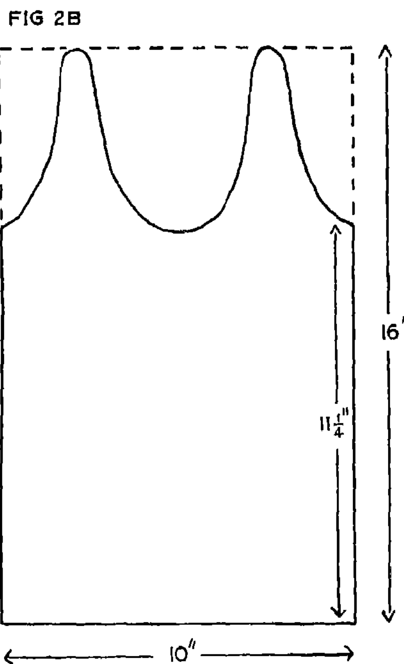
Fixing the bag on to the ring is the most difficult part of the construction of this gift, and pupils will probably need help with the operation. The opening is tacked together at the top to keep it in place. A ¼ in. is turned down on to the right side all round the top of the bag, and tacked. The top of the bag is then turned down over the ring; a hem is made, using decorative tacking stitch, drawing the stitches tight to gather in the fullness. Only ½ in. can be done at a time, and this is then pushed together, for the space in which to work becomes very restricted as the needlework progresses.

A cover for a hot water bottle.—A decorated cover for a hot water bottle is shown in Figure 2, Plate VII. The stitches used are cross stitch, running and back stitch, slip stitch and herringbone

There are no additions to the tool pochette







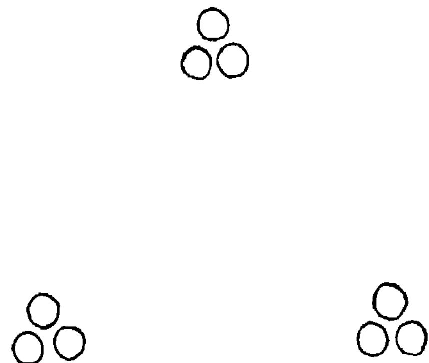


FIG 2A DESIGN FOR COVER OF HOT WATER BOTTLE
FIG 2B PATTERN FOR COVER OF HOT WATER BOTTLE

FIG 3A DESIGN FOR THE GUEST TOWEL
FIG 4A DESIGN FOR MODESTY VEST

The following classroom tools and materials will be needed:—

Coloured flannel.
Tapestry wools in clear, strong colours
Sateen to match the flannel
Coarse, single weave embroidery canvas
Sewing cotton to match the flannel.
Tacking cotton.
Dress fasteners. Large cutting-out scissors.
Carbon paper. Squared paper.
HB and 3H pencils Rulers

The sizes of water bottles vary, but the measurements given here are such as will fit the average size in hot water bottles The opening at the bottom is also decided by the shape of the bottle

The bag shown in the photograph is made from two pieces of flannel measuring 16 in by 10 in., and 11½ in. by 10 in. respectively. The decoration is executed on the larger piece, before the straps that cross over the shoulders are cut out Simple appropriate designs, geometric in character, are best, especially as they are to be executed in cross stitch.

Figure 2A, Plate VIII, shows the design on the bag in the photograph. It is traced on to a piece of coarse, embroidery canvas, care being taken that the straight line of the base of the design is on a thread of the material. The canvas bearing the design is tacked on to the flannel in the desired position. The design is then worked in cross stitch. The candle is white, the flame orange, the candlestick red and the lettering black on a pale green flannel When the cross stitch is finished, the canvas is cut away to within 1 in. of the stitchery. As many strands of the canvas as possible are frayed away, the remaining threads being withdrawn carefully. The design is then left worked on the flannel background.

The cover is cut out according to the pattern illustrated in Fig. 2B, Plate VIII The smaller piece of flannel is already of the right size. The two sides of the bag are laid on top of each other with the right sides facing inside The three sides are run together with occasional back stitches, leaving 4 in. open in the middle of the bottom seam. The seams are laid back from the stitching and are herring-boned flat, one on either side of the seam The straps and top of the bag are bound with sateen, 1 in. wide, cut on the bias.

One half of the dress fastener is sewn on each flap, and the second half in its corresponding place on the back of the bag Press the seams from the right side when the bag is finished.

A guest towel.—A guest towel decorated with appliqué is shown in Figure 3. Plate VII The stitches used are hem stitch, top sewing and button holing.

There are no additions to the tool pochette

The following classroom tools and materials will be needed:—

White huckaback, 15 in wide.
Pieces of coloured linen D.M.C. *coton à broder* to match the coloured linens
White sewing cotton Tacking cotton.
No. 5 or 6 sewing needles.
Large cutting-out scissors Medium sized scissors.
Starch paste A flat hog's hair brush
Squared paper Used carbon paper
HB and 3H pencils. Rulers.

The guest towel is made from a length of huckaback ⅝ yd long. It is prepared and hem stitched in the same way as the towel in Lesson III Volume III page 672; with the exception that the hem stitching is finished before the decoration is executed

The decoration on the towel in the photograph is an adaptation of the design used on the tray cloth in Lesson VII. Volume III page 680 It is carried out in orange and buttercup linen A design is worked out on squared paper and transferred to the towel with carbon paper using a 3H pencil Figure 3A, Plate VIII shows the design on the towel in the photograph When the design has

been traced on to the towel, the design on the squared paper is used as a working drawing for cutting the pieces of coloured linen by the method of measuring and drawing threads to cut by. The pieces of the design are attached to the tracing on the towel with starch paste and are executed in buttonhole stitch

A modesty vest.—Figure 4, Plate VII shows a modesty vest made of linen and embroidered in two shades of yellow with a design composed of triple spots The stitches used are hem stitching, satin stitch, top-sewing and slip stitching.

There are no additions to the tool pochette

The following classroom tools and materials will be needed.

Light-weight linen or some similar material
D M C. stranded cotton in suitable colours.
White sewing cotton. Tacking cotton.
No. 5 or 6 sewing needles
Large cutting-out scissors
Used carbon paper Squared paper
HB and 3H pencils.

The front illustrated in the photograph is made from a piece of linen measuring 10 in by 9 in A few threads are drawn 3 or 2½ in in from the edge across the narrower width When finished the hem will be 1¼ or 1 in wide, this allows ½ in for turning. The ends of the hems are turned in on themselves and top-sewn together A very narrow hem is turned down round the remaining sides and slip stitched

A suitable design is worked out on squared paper and transferred to the vest with carbon paper, using a 3H pencil Figure 4A, Plate VIII. shows the design used on the vest in the photograph The design is executed in satin stitch having the darker shade for the top and bottom rows and a paler shade for the middle row of dots

When the decoration is finished the work must be pressed from the wrong side with a damp cloth.

NOTABLE EXPLORERS

In schools where oral lessons are still an important part of the teaching methods, none is more interesting to the children than some story of adventure and discovery of a notable explorer Most children now go regularly to the cinema, and they are so familiar with the pictures of distant lands that they can readily follow and enjoy the wonderful stories of early exploration When arranging a course of lessons on notable explorers it is advisable to make use of a Time Chart in order that the children may have clearly fixed in their minds the proper sequence of events Pictures of life in Egypt (a life which has in many respects changed but little during many centuries) are frequently shown on the films, consequently, it would be well to begin with an account of Herodotus, the Father of History. (See Vol II, page 126) From the time of Herodotus to Marco Polo we know little of geographical discovery. The story of Marco Polo (*c.* 1254-1324) is told in Vol. IV, page 29 The following accounts of some of the sights which deeply impressed this famous traveller are interesting. It will be advisable to use a map of Asia when reading the stories to the children (For important stories of explorers already told see *Magellan*, Vol IV, page 93; *Henry the Navigator*, Vol. IV, page 94, *Columbus*, Vol IV., page 95.)

Marco Polo, January 9

In the present days of speedy travel by steamship, motor car, and aeroplane, we may well think that we know much more of foreign countries than did people who lived nearly seven hundred years ago. It may even seem to us impossible that people of the Middle Ages should have been able to travel much at all, but travel they did, on foot and on horseback, though their journeys took many months and even years to accomplish They were forced, of course,

to travel in large companies, for robbers were frequent on roads and at inns. But with surprising courage they penetrated the innermost parts of Asia, while crusades drew armies into Palestine from all parts of Europe.

Among the greatest travellers of the Middle Ages were the Italian merchants of such important cities as Venice, Florence, and Milan They were led by their desire for trade into the countries round the Black Sea, and into Arabia and India. From these Eastern countries they obtained rich silks, marvellously woven carpets, spices, jewels, and valuable metals.

The most famous book of travel written at the end of the thirteenth century was composed by Marco Polo, the son of a rich Venetian merchant, who took him on a visit to the court of the great Tartar chief, Khublai, who was then ruling over one part of the great Chinese empire. Marco Polo's father had first visited Turkomania, the region between the Black Sea and the Mediterranean, where he had found a very fine breed of horses, the people of this land made beautiful carpets, and wove silks of crimson and other rich colours

From Turkomania the travellers went to Armenia, where they saw some remarkable warm springs coming out of the earth and fountains of oil, which the people used as fuel for their lamps. Here, too, was the mountain on which it was said Noah's Ark had rested during the Flood

In Persia the travellers noticed particularly the camels, the date groves, and the mountains containing turquoises and precious metals. They admired, too, the wonderful cloth of gold woven by the Persians, and the objects made of carved ivory from elephants' teeth.

Marco Polo and his comrades passed over the great desert Gobi, where they heard strange tales of the spirits of the desert and of their wicked tricks to lure men to their death Finally, in Western China, they came to the court of the khan or chief, who was called Khublai In Eastern countries the title "khan" is placed after the name of the ruling chief, so that Khublai is known as Khublai Khan.

The Palace of the Grand Khan at Shandu

Departing from the city last mentioned, and proceeding three days' journey in a north-easterly direction, you arrive at a city called Shandu, built by the grand khan, Kublai, now reigning. In this he caused a palace to be erected, of marble and other handsome stones, admirable as well for the elegance of its design as for the skill displayed in its execution. The halls and chambers are all gilt, and very handsome It presents one front towards the interior of the city, and the other towards the wall; and from each extremity of the building runs another wall to such an extent as to enclose sixteen miles in circuit of the adjoining plain, to which there is no access but through the palace. Within the bounds of this royal park there are rich and beautiful meadows, watered by many rivulets, where a variety of animals of the deer and goat kind are pastured, to serve as food for the hawks and other birds employed in the chase, whose mews are also in the grounds The number of these birds is upwards of two hundred, and the grand khan goes in person, at least once in the week, to inspect them. Frequently, when he rides about this enclosed forest, he has one or more small leopards carried on horseback, behind their keepers; and when he pleases to give direction for their being slipped, they instantly seize a stag, or goat, or fallow deer, which he gives to his hawks, and in this manner he amuses himself. In the centre of these grounds, where there is a beautiful grove of trees, he has built a royal pavilion, supported upon a colonnade of handsome pillars, gilt and varnished. Round each pillar a dragon, likewise gilt, entwines its tail, whilst its head sustains the projection of the roof, and its talons or claws are extended to the right

and left along the entablature The roof is of bamboo cane, likewise gilt, and so well varnished that no wet can injure it. The bamboos used for this purpose are three palms in circumference and ten fathoms in length, and being cut at the joints, are split into two equal parts, so as to form gutters, and with these (laid concave and convex) the pavilion is covered; but to secure the roof against the effect of wind, each of the bamboos is tied at the ends to the frame The building is supported on every side (like a tent) by more than two hundred very strong silken cords, and otherwise, from the lightness of the materials, it would be liable to oversetting by the force of high winds. The whole is constructed with so much ingenuity of contrivance that all the parts may be taken asunder, removed, and again set up, at his majesty's pleasure. This spot he has selected for his recreation on account of the mild temperature and salubrity of the air, and he accordingly makes it his residence during three months of the year, namely, June, July, and August; and every year, on the twenty-eighth day of the moon, in the last of these months, it is his established custom to depart from thence, and proceed to an appointed place, in order to perform certain sacrifices. It is to be understood that his majesty keeps up a stud of about ten thousand horses and mares, which are as white as snow; and of the milk of these mares no person can presume to drink who is not of the family descended from Jengiz Khan, with the exception only of one other family, named Boriat, to whom that monarch gave the honourable privilege, in reward of valorous achievements in battle, performed in his own presence.

The Palace of the Grand Khan at Kanbalu

The grand khan usually resides during three months of the year, namely, December, January, and February, in the great city of Kanbalu, situated towards the north-eastern extremity of the province of Cathay, and here, on the southern side of the new city, is the site of his vast palace, the form and dimensions of which are as follows. In the first place is a square enclosed with a wall and deep ditch, each side of the square being eight miles in length, and having at an equal distance from each extremity an entrance gate, for the concourse of people resorting hither from all quarters. Within this enclosure there is, on the four sides, an open space one mile in breadth, where the troops are stationed, and this is bounded by a second wall, enclosing a square of six miles, having three gates on the south side, and three on the north, the middle portal of each being larger than the other two, and always kept shut, excepting on the occasions of the emperor's entrance or departure. In the middle of each division of these walls is a handsome and spacious building, and consequently within the enclosure there are eight such buildings, in which are deposited the royal military stores, one building being appropriated to the reception of each class of stores Thus, for instance, the bridles, saddles, stirrups, and other furniture serving for the equipment of cavalry, occupy one storehouse, the bows, strings, quivers, arrows, and other articles belonging to archery, occupy another, cuirasses, corselets, and other armour formed of leather, a third storehouse, and so of the rest Within this walled enclosure there is still another, of great thickness, and its height is full twenty-five feet. The battlements or crenated parapets are all white This also forms a square four miles in extent, each side being one mile, and it has six gates disposed like those of the former enclosure. It contains, in like manner, eight large buildings, similarly arranged, which are appropriated to the wardrobe of the emperor The spaces between the one wall and the other are ornamented with many handsome trees, and contain meadows in which are kept various kinds of beasts, such as stags, the animals that yield the musk,

roe-bucks, fallow-deer, and others of the same class Every interval between the walls, not occupied by buildings, is stocked in this manner. The pastures have abundant herbage. The roads across them being raised three feet above their level, and paved, no mud collects upon them, nor rain water settles, but on the contrary runs off, and contributes to improve the vegetation. Within these walls, which constitute the boundary of four miles, stands the palace of the grand khan, the most extensive that has ever yet been known. It reaches from the northern to the southern wall, leaving only a vacant space (or court), where persons of rank and the military guards pass and repass. It has no upper floor, but the roof is very lofty. The paved foundation or platform on which it stands is raised ten spans above the level of the ground, and a wall of marble, two paces wide, is built on all sides, to the level of this pavement, within the line of which the palace is erected, so that the wall, extending beyond the ground plan of the building, and encompassing the whole, serves as a terrace, where those who walk on it are visible from without Along the exterior edge of the wall is a handsome balustrade, with pillars, which the people are allowed to approach The sides of the great halls and the apartments are ornamented with dragons in carved work and gilt, figures of warriors, of birds, and of beasts, with representations of battles. The inside of the roof is contrived in such a manner that nothing besides gilding and painting presents itself to the eye On each of the four sides of the palace there is a grand flight of marble steps, by which you ascend from the level of the ground to the wall of marble which surrounds the building, and which constitute the approach to the palace itself

The grand hall is extremely long and wide, and admits of dinners being there served to great multitudes of people. The palace contains a number of separate chambers, all highly beautiful, and so admirably disposed that it seems impossible to suggest any improvement to the system of their arrangement. The exterior of the roof is adorned with a variety of colours, red, green, azure, and violet, and the sort of covering is so strong as to last for many years The glazing of the windows is so well-wrought and so delicate as to have the transparency of crystal In the rear of the body of the palace there are large buildings containing several apartments, where is deposited the private property of the monarch, or his treasure in gold and silver bullion, precious stones, and pearls, and also his vessels of gold and silver plate.

On the other side of the grand palace, and opposite to that in which the emperor resides, is another palace, in every respect similar, appropriated to the residence of Chingis, his eldest son, at whose court are observed all the ceremonials belonging to that of his father, as the prince who is to succeed to the government of the empire. Not far from the palace, on the northern side, and about a bow-shot distance from the surrounding wall, is an artificial mount of earth, the height of which is full a hundred paces, and the circuit at the base about a mile It is clothed with the most beautiful evergreen trees, for whenever his majesty receives information of a handsome tree growing in any place, he causes it to be dug up, with all its roots and the earth about them, and however large and heavy it may be, he has it transported by means of elephants to this mount, and adds it to the verdant collection. From this perpetual verdure it has acquired the appellation of the Green Mount. On its summit is erected an ornamental pavilion which is likewise entirely green. The view of this altogether,—the mount itself, the trees, and the buildings,—form a delightful and at the same time a wonderful scene In the northern quarter also, and equally within the precincts of the city, there is a large and deep excavation, judiciously formed, the earth from which supplied the material for raising the mount It is furnished with water by a small rivulet,

and has the appearance of a fishpond, but its use is for watering the cattle. The stream passing from thence along an aqueduct, at the foot of the Green Mount, proceeds to fill another great and very deep excavation formed between the private palace of the emperor and that of his son Chingis, and the earth from hence equally served to increase the elevation of the mount In this latter basin there is great store and variety of fish, from which the table of his majesty is supplied with any quantity that may be wanted. The stream discharges itself at the opposite extremity of the piece of water, and precautions are taken to prevent the escape of the fish by placing gratings of copper or iron at the places of its entrance and exit. It is stocked also with swans and other aquatic birds. From the one palace to the other there is a communication by means of a bridge thrown across the water. Such is the description of this famous palace

The Grand Khan's Birthday

All the Tartar and other subjects of the grand khan celebrate as a festival the day of his majesty's birth, which took place on the twenty-eighth day of the month of September, and this is their greatest festival, excepting only that kept on the first day of the year, which shall be hereafter described. Upon this anniversary the grand khan appears in a superb dress of cloth of gold, and on the same occasion full twenty thousand nobles and military officers are clad by him in dresses similar to his own in point of colour and form, but the materials are not equally rich. They are, however, of silk, and of the colour of gold, and along with the vest they likewise receive a girdle of chamois leather, curiously worked with gold and silver thread, and also a pair of boots Some of the dresses are ornamented with precious stones and pearls to the value of a thousand bezants of gold, and are given to those nobles who, from their confidential employments, are nearest to his majesty's person. These dresses are appointed to be worn on the thirteen solemn festivals in the thirteen (lunar) months of the year, when those who are clad in them make an appearance that is truly royal. When his majesty assumes any particular dress, the nobles of his court wear corresponding, but less costly, dresses, which are always in readiness They are not annually renewed, but on the contrary are made to last about ten years From this parade an idea may be formed of the magnificence of the grand khan, which is unequalled by that of any monarch in the world.

The Grand Khan Takes Care of The Roads

There is another regulation adopted by the grand khan, equally ornamental and useful. At both sides of the public roads he causes trees to be planted, of a kind that become large and tall, and being only two paces asunder, they serve, besides the advantage of their shade in summer, to point out the road (when the ground is covered with snow); which is of great assistance and affords much comfort to travellers. This is done along all the high roads, where the nature of the soil admits of plantation, but when the way lies through sandy deserts or over rocky mountains, where it is impossible to have trees, he orders stones to be placed and columns to be erected, as marks for guidance He also appoints officers of rank, whose duty it is to see that all these are properly arranged and the roads constantly kept in good order.

John and Sebastian Cabot

John Cabot (1450-1498) was the first man to plant the English flag in America He was an Italian merchant, who spent the early years of his life trading in the Mediterranean



SEBASTIAN CABOT
Picture formerly at Whitehall.

merchantmen. In the year 1492, there came the news that Columbus, by sailing westward, had discovered a new country for Spain, which he called the West Indies, because he believed it to be the western coast of India.

John Cabot saw his chance. He went to Henry VII. and asked to be allowed to make a similar journey to the west, so that England would have a share in the sea trade with India and win some of the new land for herself. Henry VII. willingly gave his consent, and letters patent for the purpose were issued by the king granting to his "well-beloved John Cabot, citizen of Venice, to Lewis, Sebastian and Santius, sonnes of the said John, full and free authority, leave and power upon theyr own proper costs and charges, to seeke out, discover and finde whatsoever isles, countries, regions or provinces of the heathen and infidels, which before this time have been unknown to all Christians." Merchandise from the countries visited was to be entered at Bristol free of duty, but one-fifth of the net gains was to go to the king.

Cabot set out in a small ship called the *Matthew* with eighteen men on board. They sailed westwards for fifty-two days till they touched the northern extremity of Cape Breton island. The royal banner was unfurled and Cabot took possession of the country in the name of King Henry VII Cabot felt sure that they must be near India, of course he did not know that the whole of the great continent of America stretched between England and India, and that he had discovered the land which we now call Canada. The sailors found the country wild and rocky, with savages living in it Three of these savages they caught and brought back with them as a gift to King Henry. As the ship passed the shores of Newfoundland, they noticed great numbers of fish in the sea,

sea. In those days there were no splendid railways and great steamships like those which carry our goods to-day; the rich silks, spices and precious stones from the eastern lands of India and China were brought to the ports in caravans by travelling merchants. These overland journeys were long and dangerous, and Cabot longed to find a direct sea route to the eastern lands, so that their merchandise could be brought more quickly to Europe.

Cabot knew that the world was round, and he realised that another way to reach the eastern countries was by travelling westward With his head full of plans to reach India and China from the west, Cabot went to England and settled at Bristol, which was the home of many adventurous

they had only to lower a basket into the water to bring it up full of codfish This discovery was a great source of riches to England. Soon after, fleets from all the ports on the south-western coast of England regularly visited Newfoundland, and the fishing trade there was one of the most important industries of Britain for many hundreds of years

When Cabot arrived home again, however, King Henry was disappointed; he was hoping for silk and gold, not savages and codfish. He rewarded Cabot with a little money, and gave him and his sons authority to sail again to the new land to open up trade. The next year Cabot set out with a fleet of six ships to recross the Atlantic. But this voyage was a sad one As Cabot explored more and more of the new western land, he must have discovered the truth, that this was no rich, civilised country, but another of no use for trade. He returned safely to England and soon after this great disappointment John Cabot died

John Cabot had a son, Sebastian Cabot, who, like his father, was a clever seaman. He was specially famous for his maps, and could tell just where lay the hidden rocks which the ships must avoid if they were to come safely into harbour Ships' captains would send for Sebastian Cabot to pilot their vessels through dangerous waters, and he was so famous as a pilot that Charles V., the king of Spain, made him Pilot General of the sea, the man who examined all other pilots and saw that they were fit for their duty.

Sebastian (*c* 1476-1557) held this important position for thirty years. Like his father, however, he was always planning great voyages of exploration, but unlike his father, he was not able to lead them. He commanded one fleet of Spanish ships that went to trade in South America, but the natives were so fierce that he had to come back without the gold and silver which he had been sent to collect. The Spaniards were angry at his failure, and Sebastian was sent into exile for some years At the end of that time he was allowed to take up his work once more as Pilot General.

After he had lived in this way for thirty years, Sebastian Cabot decided to go back to England, where he had lived as a boy The English sea captains were very glad to have this wise old man with them, for they were planning a new enterprise. They meant to try to reach India by sailing north-east along the coast of Russia Sebastian Cabot helped them to decide the way they should go and gave them good advice about the journey.

Three shiploads of men set off Two of them, under Sir Hugh Willoughby, lost their way, and during the winter the ships were moored off Russian Lapland, but the cold was so intense that every man was frozen to death. The third ship, under the command of Richard Chancellor, found the entrance to the White Sea, and the captain travelled overland to Moscow, the capital of Russia The Russian ruler, Ivan the Terrible, was pleased to see him, and promised to let English ships come to Russia to sell English goods. On Chancellor's arrival home, in 1554, his story created a great sensation, and two more ships were sent out. Old Sebastian Cabot went down to see the last one off, and begged all the people on the quay side to pray for her good success Then he gave money to the poor, and held a great banquet, with dancing after it in which he joined, old as he was But before the ship came back from Russia Sebastian Cabot was dead

These two Cabots, father and son, failed to find a new route to the eastern lands, but in their efforts won several stretches of land in America for England, paved the way for the Newfoundland fishing industry, and opened trade with Russia. The company that began the trade with Russia was called the *Muscovy Company* It did good business for several years, but unfortunately several ships were lost, and Chancellor himself was wrecked and drowned.

Christopher Columbus, May 20

The story of Columbus (c 1446 or 1451-1506) and of his discovery of the New World is told in Vol IV, page 95. The following descriptions by Washington Irving of the landing of Columbus and his return to Barcelona will be of interest to the children

THE FIRST LANDING OF COLUMBUS IN THE NEW WORLD

When the day dawned, Columbus saw before him a level and beautiful island, several leagues in extent, of great freshness and verdure, and covered with trees like a continual orchard Though everything appeared in the wild luxuriance of untamed nature, yet the island was evidently populous, for the inhabitants were seen issuing from the woods, and running from all parts to the shore They were all perfectly naked, and, from their attitudes and gestures, appeared lost in astonishment at the sight of the ships Columbus made signal to cast anchor, and to man the boats. He entered his own boat richly attired in scarlet, and bearing the royal standard Martin Alonzo Pinzon, and Vicente Yañez, the brother, likewise put off in their boats, each bearing the banner of the enterprise, emblazoned with a green cross, having on each side the letters F and Y, surmounted by crowns, the Spanish initials of the Castilian monarchs, Fernando and Ysabel.

As they approached the shores they were delighted by the beauty and grandeur of the forests, the variety of unknown fruits on the trees which overhung the shores, the purity and suavity of the atmosphere, and the crystal transparency of the seas which bathe these islands. On landing, Columbus threw himself upon his knees, kissed the earth, and returned thanks to God with tears of joy. His example was followed by his companions, whose breasts, indeed, were full to overflowing. Columbus, then rising, drew his sword, displayed the royal standard, and took possession, in the names of the Castilian sovereigns, giving the island the name of San Salvador He then called upon all present to take the oath of obedience to him, as Admiral and Viceroy, and representative of the sovereigns

His followers now burst forth into the most extravagant transports They thronged around him, some embracing him, others kissing his hands Those who had been most mutinous and turbulent during the voyage were now most devoted and enthusiastic Some begged favours of him, as of a man who had already wealth and honours in his gift. Many abject spirits, who had outraged him by their insolence, now crouched at his feet, begging his forgiveness, and offering, for the future, the blindest obedience to his commands.

The natives of the island, when, at the dawn of day, they had beheld the ships hovering on the coast, had supposed them some monsters, which had issued from the deep during the night Their veering about, without any apparent effort, and the shifting and furling of their sails, resembling huge wings, filled them with astonishment When they beheld the boats approach the shore, and a number of strange beings, clad in glittering steel, or raiment of various colours, landing upon the beach, they fled in affright to their woods Finding, however, that there was no attempt to pursue or molest them, they gradually recovered from their terror, and approached the Spaniards with great awe, frequently prostrating themselves, and making signs of adoration. During the ceremony of taking possession they remained gazing, in timid admiration, at the complexion, the beards, the shining armour, and splendid dress of the Spaniards The Admiral, particularly, attracted their attention, from his commanding height, his air of authority, his scarlet dress, and the deference paid to him by his companions; all which pointed him out to be the commander When they had still further recovered from their fears they approached

the Spaniards, touched their beards, and examined their hands and faces, admiring their whiteness Columbus, pleased with their simplicity, their gentleness, and the confidence they reposed in beings who must have appeared so strange and formidable, submitted to their scrutiny with perfect acquiescence. The wondering savages were won by this benignity; they now supposed that the ships had sailed out of the crystal firmament which bounded their horizon, or that they had descended from above, on their ample wings, and that these marvellous beings were inhabitants of the skies.

The natives of the islands were no less objects of curiosity to the Spaniards, differing, as they did, from any race of men they had ever seen They were entirely naked, and painted with a variety of colours and devices, so as to have a wild and fantastic appearance Their natural complexion was of a tawny, or copper hue, and they were entirely destitute of beards Their hair was not crisped, like the recently discovered tribes of Africa under the same latitude, but straight and coarse, partly cut above the ears, but some locks behind left long, and falling upon their shoulders. Their features, though disfigured by paint, were agreeable; they had lofty foreheads and remarkably fine eyes They were of moderate stature and well shaped; most of them appeared to be under thirty years of age. There was but one female with them, quite young, naked, like her companions, and beautifully formed They appeared to be a simple and artless people and of gentle and friendly dispositions Their only arms were lances, hardened at the end by fire, or pointed with a flint or the bone of a fish There was no iron to be seen among them, nor did they know its properties, for when a drawn sword was presented to them they unguardedly took it by the edge Columbus distributed among them coloured caps, glass beads, hawk's bells, and other trifles, which they received as inestimable gifts and, decorating themselves with them, were wonderfully delighted with their finery

As Columbus supposed himself to have landed on an island at the extremity of India, he called the natives by the general appellation of Indians, which was universally adopted before the nature of his discovery was known, and has since been extended to all the aboriginals of the New World The Spaniards remained all day on shore, refreshing themselves after their anxious voyage, amidst the beautiful groves of the island, and they returned to their ships late in the evening, delighted with all they had seen.

The island where Columbus had thus, for the first time, set his foot upon the New World, is one of the Lucayos, or Bahama Islands, and was called by the natives Guanahani, it still retains the name of San Salvador, which he gave it, though called by the English, Cat Island. The light which he had seen the evening previous to his making land may have been on Watling's Island, which lies a few leagues to the east.

On the following morning, at daybreak, some of the natives came swimming off to the ships, and others came in light barques, which they called canoes, formed of a single tree, hollowed, and capable of holding from one man to the number of forty or fifty. The Spaniards soon discovered that they were destitute of wealth, and had little to offer in return for trinkets, except balls of cotton yarn and domesticated parrots They brought cakes of a kind of bread called cassava, made from the yucca root, which constituted a principal part of their food.

The avarice of the discoverers was awakened by perceiving small ornaments of gold in the noses of some of the natives On being asked where this precious metal was procured, they answered by signs, pointing to the south, and Columbus understood them to say that a king resided in that quarter, of such wealth that he was served in great vessels of gold. He interpreted all their imperfect communications according to his previous ideas and his cherished wishes They spoke of a warlike people, who often invaded their island from the

north-west, and carried off the inhabitants These he concluded to be the people of the mainland of Asia, subjects to the grand khan, who, according to Marco Polo, were accustomed to make war upon the islands and make slaves of the natives. The rich country to the south could be no other than the island of Cipango, and the king who was served out of golden vessels must be the monarch whose magnificent palace was said to be covered with plates of gold.

Having explored the island of Guanahani, and taken in a supply of wood and water, Columbus set sail in quest of the opulent country to the south, taking seven of the natives with him, to acquire the Spanish language, and serve as interpreters and guides.

He now beheld a number of beautiful islands, green, level, and fertile, and the Indians intimated by signs that they were innumerable; he supposed them to be a part of the great archipelago described by Marco Polo as stretching along the coast of Asia, and abounding with spices and odoriferous trees. He visited three of them, to which he gave the names of Santa Maria de la Conception, Fernandina, and Isabella. The inhabitants gave the same proofs as those of San Salvador of being totally unaccustomed to the sight of civilised man. They regarded the Spaniards as superhuman beings, approached them with propitiatory offerings, of whatever their poverty, or, rather, their simple and natural mode of life, afforded; the fruits of their fields and groves, the cotton yarn, and their domesticated parrots. When the Spaniards landed in search of water they took them to the coolest springs, the sweetest and freshest runs, filling their casks, rolling them to the boats, and seeking in every way to gratify their celestial visitors

Columbus was enchanted by the lovely scenery of some of these islands. "I know not," says he, "where first to go, nor are my eyes ever weary of gazing on the beautiful verdure The singing of the birds is such that it seems as if one would never desire to part hence. There are flocks of parrots that obscure the sun, and other birds of many kinds, large and small, entirely different from ours. Trees, also, of a thousand species, each having its particular fruit, and all of marvellous flavour I believe there are many herbs and trees which would be of great value in Spain for tinctures, medicines, and spices, but I know nothing of them, which gives me great vexation."

The fish which abounded in these seas partook of the novelty which characterised most of the objects in this new world They rivalled the birds in the tropical brilliancy of their colours, the scales of some of them glanced back the rays of light like precious stones, and as they sported about the ships they flashed gleams of gold and silver through the crystal waves

Columbus was disappointed in his hopes of finding any gold or spices in these islands; but the natives continued to point to the south as the region of wealth, and began to speak of an island in that direction called Cuba, which, the Spaniards understood them to say, abounded in gold, pearls, and spices, carried on an extensive commerce, and that large merchant ships came to trade with the inhabitants. Columbus concluded this to be the desired Cipango, and the merchant ships to be those of the grand khan. He set sail in search of it, and after being delayed for several days, by contrary winds and calms, among the small islands of the Bahama bank and channel, he arrived in sight of it on October 28

The Return of Columbus in Triumph to Barcelona

The journey of Columbus to Barcelona was like the progress of a sovereign. Wherever he passed, the surrounding country poured forth its inhabitants, who lined the road and thronged the villages, rending the air with acclamations. In the large towns the streets, windows, and balconies were filled with spectators, eager to gain a sight

of him, and of the Indians whom he carried with him, who were regarded with as much astonishment as if they had been natives of another planet.

It was about the middle of April that he arrived at Barcelona, and the beauty and serenity of the weather, in that genial season and favoured climate, contributed to give splendour to the memorable ceremony of his reception As he drew near the place, many of the youthful courtiers and cavaliers, followed by a vast concourse of the populace, came forth to meet him. His entrance into this noble city has been compared to one of those triumphs which the Romans were accustomed to decree to conquerors. First were paraded the six Indians, painted according to their savage fashion, and decorated with their ornaments of gold. After these were borne various kinds of live parrots, together with stuffed birds and animals of unknown species, and rare plants supposed to be of precious qualities; while especial care was taken to display the Indian coronets, bracelets, and other decorations of gold, which might give an idea of the wealth of the newly discovered regions. After this followed Columbus, on horseback, surrounded by a brilliant cavalcade of Spanish chivalry. The streets were almost impassable from the multitude, the houses, even to the very roofs, were crowded with spectators. It seemed as if the public eye could not be sated with gazing at these trophies of an unknown world, or on the remarkable man by whom it had been discovered. There was a sublimity in this event that mingled a solemn feeling with the public joy. It was considered a signal dispensation of Providence in reward for the piety of the sovereigns; and the majestic and venerable appearance of the discoverer, so different from the youth and buoyancy that generally accompany roving enterprise, seemed in harmony with the dignity and grandeur of the achievement

To receive him with suitable distinction the sovereigns had ordered their throne to be placed in public, under a rich canopy of brocade of gold, where they awaited his arrival, seated in state, with Prince Juan beside them, and surrounded by their principal nobility. Columbus arrived in their presence, accompanied by a brilliant crowd of cavaliers, among whom, we are told, he was conspicuous for his stately and commanding person, which, with his venerable grey hairs, gave him the august appearance of a senator of Rome A modest smile lighted up his countenance, showing that he enjoyed the state and glory in which he came, and certainly nothing could be more deeply moving to a mind inflamed by noble ambition, and conscious of having nobly deserved, than these testimonials of the admiration and gratitude of a nation, or rather of a world. On his approach the sovereigns rose, as if receiving a person of the highest rank Bending on his knees, he would have kissed their hands in token of vassalage, but they raised him in the most gracious manner, and ordered him to seat himself in their presence—a rare honour in this proud and punctilious court.

He now gave an account of the most striking events of his voyage, and displayed the various productions and the native inhabitants which he had brought from the new world He assured their majesties that all these were but harbingers of greater discoveries which he had yet to make, which would add realms of incalculable wealth to their dominions, and whole nations of proselytes to the true faith

When Columbus had finished, the king and queen sank on their knees, raised their hands to heaven, and, with eyes filled with tears of joy and gratitude, poured forth thanks and praises to God. All present followed their example, a deep and solemn enthusiasm pervaded that splendid assembly and prevented all common acclamations of triumph. The anthem of Te Deum laudamus, chanted by the choir of the royal chapel, with the melodious accompaniment of instruments, rose up from the midst in a full body of harmony, bearing up, as it were, the feelings and thoughts of the auditors

to heaven Such was the solemn and pious manner in which the brilliant court of Spain celebrated this sublime event, offering up a grateful tribute of melody and praise, and giving glory to God for the discovery of another world.

While the mind of Columbus was excited by this triumph and teeming with splendid anticipations, his pious scheme for the deliverance of the Holy Sepulchre was not forgotten Flushed with the idea of the vast wealth that must accrue to himself from his discoveries, he made a vow to *furnish, within seven years, an army of* four thousand horse and fifty thousand foot, for a crusade to the Holy Land, and a similar force with the five following years It is essential, to a full knowledge of the character and motives of this extraordinary man, that this visionary project should be borne in recollection. It shows how much his mind was elevated above selfish and mercenary views, and filled with those devout and heroic schemes which, in the time of the crusades, had inflamed the thoughts and directed the enterprises of the bravest warriors and most illustrious princes.

During his sojourn at Barcelona the sovereigns took every occasion to bestow on Columbus the highest marks of personal consideration He was admitted at all times to the royal presence; appeared occasionally with the king on horseback, riding on one side of him, while Prince Juan rode on the other side; and the queen delighted to converse familiarly with him on the subject of his voyage. To perpetuate in his family the glory of his achievement a coat of arms was given him, in which he was allowed to quarter the royal arms, the castle and lion, with those more particularly assigned him, which were a group of islands surrounded by waves, to these arms was afterwards annexed the motto.

A CASTILLA Y A LEON
NUEVO MUNDO DIO COLON
(To Castile and Leon
Columbus gave a new world)

The pension of thirty crowns, which had been decreed by the sovereigns to whomsoever should first discover land, was adjudged to Columbus, for having first seen the light on the shore. It is said that the seaman who first descried the land was so incensed at being disappointed of what he deemed his merited reward, that he renounced his country and his faith, and, crossing into Africa, turned Mussulman, an anecdote, however, which rests on rather questionable authority.

The favour shown Columbus by the sovereigns insured him for a time the caresses of the nobility, for, in a court, everyone is eager to lavish attentions upon the man "whom the king delighteth to honour." At one of the banquets which were given him occurred the well-known circumstance of the egg A shallow courtier present, impatient of the honours paid to Columbus, and meanly jealous of him as a foreigner, abruptly asked him whether he thought that, in case he had not discovered the Indies, there would have been wanting men in Spain capable of the enterprise. To this Columbus made no direct reply, but, taking an egg, invited the company to make it stand upon one end. Everyone attempted it, but in vain; whereupon he struck it upon the table, broke one end, and left it standing on the broken part; illustrating, in this simple manner, that when he had once shown the way to the New World nothing was easier than to follow it.

The joy occasioned by this great discovery was not confined to Spain, the whole civilised world was filled with wonder and delight. Everyone rejoiced in it as an event in which he was more or less interested, and which opened a new and unbounded field for inquiry and enterprise. Men of learning and science shed tears of joy, and those of ardent imaginations indulged in the most extravagant and delightful dreams. Notwithstanding all this triumph, however, no one had an idea of the real importance of the discovery The opinion of Colombus was universally adopted, that Cuba was the

end of the Asiatic continent, and that the adjacent islands were in the Indian Seas. They were called, therefore, the West Indies, and as the region thus discovered appeared to be of vast and indefinite extent, and existing in a state of nature, it received the comprehensive appellation of "The New World."

boy was given an excellent education He was sent to Eton and Oxford and learned to be such a great scholar that he was rarely seen without a book in his hand.

Humphrey's family hoped that he would become a lawyer, but his own wishes were far different. He had set his heart on being an explorer and on making the lands he dis-



SIR HUMPHREY GILBERT

Engraving by C. Van de Pas, in Holland's "Heroologia"

Sir Humphrey Gilbert, September 9

One of the great Englishmen of the reign of Queen Elizabeth was Sir Humphrey Gilbert (c 1539-1583) He was the step-brother of the courtly Sir Walter Raleigh, another great man of the day, and like him was born in Devonshire, near the sea The covered into homes for English men and women. Among his other studies he therefore read books about navigation or the art of sailing ships, so as to be ready to go to sea when his chance came.

In the meanwhile, like most of the young men of his day, Humphrey Gilbert went to the wars He fought in France, then in

Ireland and later in the Netherlands and Spain But his true interest was not in fighting, and when he was thirty-four years old he came home to England and settled in London, where he lived for five years, quietly thinking out his plans for exploring America and settling Englishmen there.

He could not set sail for America, however, without Queen Elizabeth's permission, and for a long while she refused to grant it At last, after five years, Gilbert received letters from the Queen which allowed him to discover and to take possession of any lands which did not already belong to a Christian king or country.

In 1583 five ships sailed westward with Sir Humphrey Gilbert, who by this time had been made a knight, at their head. They took with them a large quantity of provisions, and their plan was to find a pleasant and fruitful spot on the coast of America, and to land some of the crew to make themselves new homes there.

From the beginning of the voyage Sir Humphrey had difficulties to face. The fleet had hardly set out when the sailors in the largest of the ships, which had been fitted out by Sir Walter Raleigh, deserted and went back to England. The others sailed on till they came to Newfoundland, a large island off the north-east coast of America The seamen of Europe had long known of this island, for the waters about it teemed with fish, and boats would come out from Europe every year and go home laden with great cod and other sorts of fish.

No one from Europe had so far tried to make a home on the island, which seemed to Gilbert a good place for his settlement. He went ashore and solemnly took possession of it in the Queen's name. The only inhabitants were fishermen from many different countries who made the island their headquarters and were glad to accept Sir Humphrey as governor Another trouble fell on him at this time. A second ship left the fleet and her crew took to piracy, robbing the fishing boats that lay in their way

As Gilbert, with the three ships that still remained to him, cruised slowly along the coast exploring and looking for good landing places, a third disaster happened One of the remaining ships struck a rock and sank. This was tragedy indeed, for the lost ship had carried all the food supplies that were to keep the settlers alive in their new home. There was nothing for it but to abandon the plan of making a settlement and to set out for home in the two remaining ships, the *Squirrel*, which was Gilbert's own ship, and the *Golden Hind.*

Less than a month after reaching Newfoundland the two ships set out on their homeward voyage knowing nothing of the tragedy which lay ahead. Sir Humphrey went in the little frigate and obstinately refused to sail in his "great ship," the *Golden Hind.* As they sailed, Sir Humphrey spent his time reading his beloved books or watching the creatures of the sea. One day he saw what he thought was a great sea monster. It seemed to him to be a lion or a fish shaped like a lion. It was probably only a walrus or a seal, but Sir Humphrey Gilbert who, like even the wisest men of his day, believed in good and evil spirits, rejoiced when he saw it. He thought that it was a good spirit which would bring them luck on the voyage.

Alas, it was not good luck which the sea monster brought! That night, September 9, 1583, a fierce storm swept down on the two little ships and drove them before it. Once the *Squirrel* was nearly swamped, but she righted herself The men of the *Golden Hind*, which was following close behind her, saw Sir Humphrey seated on the deck in the midst of the raging tempest, calmly reading one of his books. Undisturbed by the awful danger from which the ship had barely escaped, he called out encouragingly, "Have no fear! We are as near to heaven by sea as by land!"

He was nearer to heaven than he knew. A moment after, a great wave struck the little *Squirrel* and the men of the *Golden Hind* saw her lights suddenly go out. "In that moment," said the captain of the

Golden Hind who told the story afterwards, "the frigate was devoured and swallowed up of the sea," and all who were in her were drowned So perished Sir Humphrey Gilbert, the brave soldier, scholar and explorer, and the first Englishman to attempt to plant a colony in America

SIR HUMPHREY GILBERT

Southward with fleet of ice
Sailed the corsair Death;
Wild and fast blew the blast,
And the east wind was his breath

His lordly ships of ice
Glistened in the sun,
On each side, like pennons wide,
Flashing crystal streamlets run.

His sails of white sea-mist
Dripped with silver rain,
But where he passed there were cast
Leaden shadows o'er the main

Eastward from Campobello
Sir Humphrey Gilbert sailed,
Three days or more seaward he bore,
Then, alas! the land-wind failed.

Alas! the land-wind failed,
And ice-cold grew the night;
And never more, on sea or shore,
Should Sir Humphrey see the light.

He sat upon the deck,
The Book was in his hand;
"Do not fear! Heaven is near,"
He said, "by water as by land!"

In the first watch of the night,
Without a signal's sound,
Out of the sea, mysteriously,
The fleet of Death rose all around

The moon and the evening star
Were hanging in the shrouds,
Every mast, as it passed,
Seemed to rake the passing clouds

They grappled with their prize,
At midnight black and cold!
As of a rock was the shock,
Heavily the ground-swell rolled.

Southward through day and dark,
They drift in close embrace,
With mist and rain o'er the open main;
Yet there seems no change of place.

Southward, for ever southward,
They drift through dark and day;
And like a dream in the Gulf-stream
Sinking, vanish all away.

Longfellow

Sir Francis Drake, January 28

Francis Drake (*c* 1545-1595), an English admiral, was born near Tavistock, in Devonshire While he was still a little boy trouble came upon the family Francis's father was a Protestant, and during the reign of Queen Mary, who was a Catholic, Francis's father and his family were obliged to leave their pleasant Devonshire home and go to Kent The queen who followed Mary, however, Queen Elizabeth, was a Protestant and she made him a naval chaplain, that is a clergyman whose special work is to preach to the sailors in their ships. Probably little Francis went with his father on his visits to the ship and he would watch the sailors about their work and long to sail with them to the distant lands of which they told such fascinating tales

Francis himself always meant to be a sailor He was given into the care of his kinsman, Sir John Hawkins, a famous sea captain As soon as he was old enough, young Francis went to sea and learned how to sail a ship He managed at the same time to learn his lessons and in after life he wrote many interesting letters, he loved reading good books, and he knew how to behave as a Christian gentleman should

The master mariner on whose ship Francis was placed to learn to be a sailor liked the

boy so much for his good behaviour and pleasant ways that when he died he left him a small ship, called the *Judith*, for his own. Thus at the age of twenty-two Francis Drake became captain of his own ship.

At this time all Englishmen and Spaniards were bitter enemies, and Drake had, as he thought, special reason for his enmity of them. It happened that Captain Hawkins was going on a trading voyage to the New World and he asked his young kinsman to come with him in the *Judith*. These voyages were dangerous, because though sometimes the Spaniards were friendly and would buy the English goods, at other times they would attack the English ships. While Hawkins, with his little fleet of five ships, was sailing along the American coast, a storm arose, and they were obliged to seek safety in a Spanish harbour The Spaniards promised to treat the English as friends, but they broke their promise and attacked them Hawkins, Drake and their men fought like tigers, but they lost three of their ships, and escaped only with their lives, losing all the treasure they had gathered. Drake never forgot this Spanish treachery and swore to spend the rest of his life in punishing the Spaniards for it.

When he reached England he gathered a crew and set out once more for America. There he set to work to harass the Spaniards. He and his men had many wonderful adventures. Once they captured an entire city named Nombre de Dios, where the Spaniards stored the treasure they gathered in America before they sent it home to Spain. Drake himself was badly wounded in taking the city, but he made nothing of it. He led his men to the city treasure house, where lay enormous piles of silver in solid bars—a million pounds' worth all told. Further on lay jewels, pearls and heaps of gold. Drake bade his men seize the treasure and carry it away. "I have brought you," he said, "to the mouth of the treasure of the world. If you do not take it now and wish afterwards that you had, you will have none but yourselves to blame."

But as he said these words he fell fainting from the pain of his wound. Then was seen how much his men loved him What was the "treasure of the world" to them when their leader was sorely hurt? Leaving the piles of silver and gold, they lifted him up with care and carrying him tenderly back to the ship, they sailed to a quiet cove where he might lie and recover from his hurt.

Another time Drake and his men captured a mule train which was on its way to the coast loaded with silver from the mines to be sent to Spain There was so much silver that they had to leave half of it behind, while they carried the rest to their ship and stowed it safely away.

The greatest of all Drake's adventures began when he was on the isthmus of Panama, the narrow neck of land which joins North and South America. Drake and his men hired Indian guides to show them the way. They always treated the Indians well and the Indians were helpful to the kind Englishmen, though they hated the Spaniards who made them work all day in the gold and silver mines. One of these Indian guides grew to love Drake and one day said to him, "Come with me, and I will show you a wonderful sight." He led him to a tall tree and said, "If you climb this tree, you will be able to see two seas at once."

Drake, wondering, climbed the tree and this is what he saw. Behind him was the great Atlantic Ocean, over which his ship had come from England. Before him stretched another great sheet of water, the Pacific Ocean. Then Drake knew that this great sea which no Englishman had ever seen before must lie on the west side of America, and he made up his mind to make that sea, too, free for all men to sail on "Almighty God," he prayed as he stood in the tree top, "of Thy goodness give me life and leave to sail once in that sea in an English ship."

With this great dream in his mind, Drake set sail for home in a ship laden with treasure captured from the Spaniards. Of course Drake and his men were really pirates,

taking what did not belong to them, but in those days no one thought any the worse of a man for being a pirate provided he brought home plenty of money

Fifteen months after setting out, the little ship dropped her anchor once more in Plymouth harbour. The people flocked to the quayside to welcome the captain and his brave crew. It was a Sunday morning and a service was going on in the church; but when the news was whispered that Drake was home again, the people slipped out of their pews one by one and ran down to the beach to meet the travellers till the preacher was left alone to finish his sermon to empty pews

There was great rejoicing in England when the news flew round Queen Elizabeth herself sent for Drake to come to London and tell her himself the story of his adventures But in the midst of all the excitement he did not forget his dream of finding a way into the great unknown sea which he had seen from the tree top. He began to collect ships and provisions, and at last five ships were ready. Tiny ships they would seem to us, for the largest of them, Drake's own ship, was smaller than those we see on our rivers to-day. But this gallant little ship was to make a voyage such as no other ship had ever made. She was to sail right round the world.

Drake did not tell his sailors where they were going or they might have refused to go, for they believed that the unknown parts of the world were the homes of terrible demons. They thought that they were going on a treasure-hunting voyage near home. In 1577 all was ready, and the little fleet set out to search for the unknown sea.

On and on they sailed till they came to the coast of South America. By this time the sailors had begun to realise that a long voyage lay ahead of them, and one of them, named Thomas Doughty, mutinied and tried to persuade the rest to murder their captain. When Drake found this out, although Doughty was his own friend Drake said that he must be punished Forty of the sailors were appointed to try him, and they said that he must be put to death. Doughty was sorry for what he had done. He asked Drake's forgiveness, and the two friends dined together for the last time before Doughty went out to meet his death.

After this sad event, the little ships sailed on. Before entering the Straits of Magellan Drake destroyed two of his weakest ships, and the remaining three successfully passed through the Straits. Then a terrible storm arose in which the ships were separated For seven weeks the storm raged, and again and again the sailors in Drake's ship thought that they would be dashed to pieces One of the ships was wrecked, one sailed home again to England, and only Drake in the *Pelican* which he had renamed the *Golden Hind* weathered the storm At last the weather cleared, the sea grew calm again, and Drake came to Callao, the port of Peru, where lay the rich silver mines.

How amazed the Spaniards must have been when the little English vessel came sailing into the ocean which they thought was their own! Drake captured any Spanish ships he met, sometimes landing and taking a town by surprise When the Spaniards heard that "El Draco" was coming they would gather up their treasures and flee inland, so terrible to them was the name of this bold English seaman.

On and on he sailed, till the weather grew cold and he knew that he must make for home with his plunder. He dared not go back the way he had come, for he knew that the Spaniards would be waiting for him, and because of the cold he could not go farther northward So he turned his course to the west and sailed for sixty-eight days without seeing land. How the men must have cheered when at the end of this long journey they sighted land and knew that it was one of the islands called the East Indies which lie east of India!

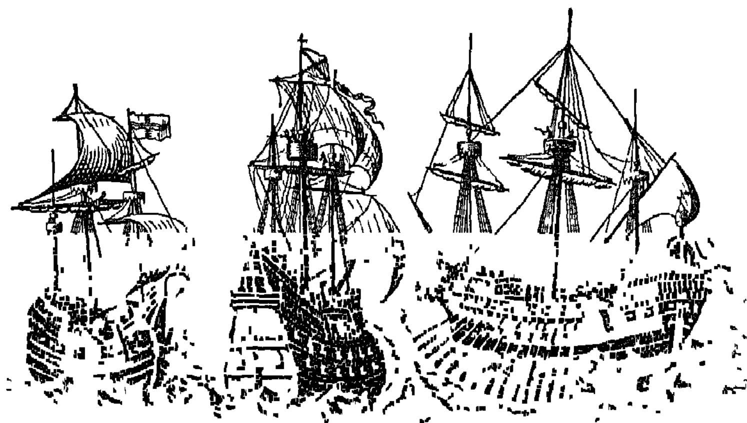
From India they knew their way home again, and two years and ten months after she set out the little *Golden Hind* came sailing into Plymouth harbour. She had been all round the world What rejoicings

there were! The great Queen Elizabeth herself came down to see Drake on board the vessel which had made this marvellous voyage and listened to the wonderful stories which he had to tell. She took the jewels he had brought her as a present and had them set in her crown Then she paid him the highest honour which she had to give "Kneel down," she commanded. Then taking a sword she struck him on the shoulder saying, "Rise up, Sir Francis Drake" From that day Drake was a knight and everyone called him "Sir Francis."

The people of England were as pleased as their queen While she honoured the man who had been round the world, they honoured the ship in which he had sailed. They thought so much of it that they even suggested hoisting it up to the top of the spire of St. Paul's Cathedral!

After his voyage round the world, Drake spent five years in England, waiting for another chance to set out against Spain. The struggle between England and Spain was then coming to open warfare, and Drake was able to join in several battles, in which he showed his skill both as a seaman and a fighter. On one occasion, hearing that a number of ships were gathered in a Spanish harbour he boldly went in and set fire to them, burning 10,000 tons of shipping which was to set out against England. This he laughingly called "singeing the king of Spain's beard." In 1588 the king of Spain sent over a mighty fleet of ships —the Armada—to conquer England. Drake played a brilliant part in the fight which followed, ending in victory for the English.

After this the Spaniards gradually lost their power. The seas became free to all men, thanks to Drake and other brave Englishmen But Sir Francis still continued to fight against them for fear the Spanish power should grow up again. He died, as he would have wished, while fighting against the enemies of freedom. He was taken ill and died, 1595, in the cabin of his ship which at the time was near Nombre de Dios in the West Indies, the treasure city he had plundered some years before.



SPANISH GALLEONS

THE ARMADA

A Fragment

Attend, all ye who list to hear our noble England's praise,
I tell of the thrice famous deeds she wrought in ancient days,
When that great fleet invincible against her bore in vain
The richest spoils of Mexico, the stoutest hearts of Spain.
It was about the lovely close of a warm summer day,
There came a gallant merchant-ship full sail to Plymouth Bay,
Her crew hath seen Castile's black fleet, beyond Aurigny's isle,
At earliest twilight on the waves lie heaving many a mile
At sunrise she escaped their van, by God's especial grace;
And the tall Pinta, till the noon, had held her close in chase.
Forthwith a guard at every gun was placed along the wall,
The beacon blazed upon the roof of Edgecumbe's lofty hall;
Many a light fishing bark put out to pry along the coast;
And with loose rein and bloody spur rode inland many a post.
With his white hair unbonneted, the stout old sheriff comes;
Behind him march the halberdiers; before him sound the drums.
His yeomen round the market cross make clear an ample space,
For there behoves him to set up the standard of Her Grace
And haughtily the trumpets peal, and gaily dance the bells,
As slow upon the labouring wind the royal blazon swells;
Look how the Lion of the sea lifts up his ancient crown,
And underneath his deadly paw treads the gay lilies down!
So stalked he when he turned to flight, on that famed Picard field,
Bohemia's plume, and Genoa's bow, and Caesar's eagle shield,
So glared he when at Agincourt in wrath he turned to bay,
And crushed and torn beneath his claws the princely hunters lay
Ho! strike the flagstaff deep, Sir Knight, ho! scatter flowers, fair maids,
Ho! gunners, fire a loud salute, ho! gallants, draw your blades:
Thou sun, shine on her joyously; ye breezes, waft her wide,
Our glorious SEMPER EADEM, the banner of our pride
The freshening breeze of eve unfurled that banner's massy fold
The parting gleam of sunshine kissed that haughty scroll of gold.
Night sank upon the dusky beach and on the purple sea,
Such night in England ne'er had been, nor e'er again shall be
From Eddystone to Berwick bounds, from Lynn to Milford Bay,
That time of slumber was as bright and busy as the day;
For swift to east and swift to west the ghastly war flame spread,
High on St Michael's Mount it shone; it shone on Beachy Head
Far on the deep the Spaniard saw, along each southern shire,
Cape beyond cape, in endless range, those twinkling points of fire
The fisher left his skiff to rock on Tamar's glittering waves,
The rugged miners poured to war from Mendip's sunless caves,
O'er Longleat's towers, o'er Cranbourne's oaks, the fiery herald flew,
He roused the shepherds of Stonehenge, the rangers of Beaulieu
Right sharp and quick the bells all night rang out from Bristol town,
And ere the day three hundred horse had met on Clifton down,
The sentinel on Whitehall gate looked forth into the night,

And saw o'erhanging Richmond Hill the streak of blood-red light.
Then bugle's note and cannon's roar the deathlike silence broke,
And with one start and with one cry the royal city woke.
At once on all her stately gates arose the answering fires;
At once the wild alarum clashed from all her reeling spires;
From all the batteries of the Tower pealed loud the voice of fear;
And all the thousand masts of Thames sent back a louder cheer;
And from the farthest wards was heard the rush of hurrying feet,
And the broad streams of pikes and flags rushed down each roaring street;
And broader still became the blaze and louder still the din,
As fast from every village round the horse came spurring in;
And eastward straight from wild Blackheath the warlike errand went,
And roused in many an ancient hall the gallant squires of Kent.
Southward from Surrey's pleasant hills flew those bright couriers forth;
High on bleak Hampstead's swarthy moor they started for the north;
And on, and on, without a pause, untired they bounded still;
All night from tower to tower they sprang; they sprang from hill to hill,
Till the proud Peak unfurled the flag o'er Darwen's rocky dales,
Till like volcanoes flared to heaven the stormy hills of Wales,
Till twelve fair counties saw the blaze on Malvern's lonely height,
Till streamed in crimson on the wind the Wrekin's crest of light,
Till broad and fierce the star came forth on Ely's stately fane,
And tower and hamlet rose in arms o'er all the boundless plain,
Till Belvoir's lordly terraces the sign to Lincoln sent,
And Lincoln sped the message on o'er the wide vale of Trent;
Till Skiddaw saw the fire that burned on Gaunt's embattled pile
And the red glare on Skiddaw roused the burghers of Carlisle.

Lord Macaulay.

Henry Hudson, June 22

You have heard how Sebastian Cabot helped to found the Muscovy Company which opened trade with Russia. Its merchants still held on to the hope of finding a sea route to the rich eastern lands,—India, China and Japan,—which would give them a cheaper and quicker trade with those countries. In 1607 the Muscovy Company sent a brave leader, Henry Hudson, in charge of a ship, to find out whether a path to China could be discovered by way of the North Pole.

Hudson took with him his little son, John, and ten men. He sailed up the North Sea, ran round the coast of Greenland and reached the land now called Spitsbergen Here he found it intensely cold; the land was covered with snow and his sails froze, while his path was blocked with ice so that he was forced to return home. Round Spitsbergen he noticed a great number of whales, and on his return to England he advised the Muscovy Company to make that part of the sea a fishing ground for them Next year he tried again to find a way through the ice to China, but, as before, the way was closed, and the Muscovy Company decided to give up the hope of reaching China, and open up the whale fisheries that Hudson had found These whale fisheries became a source of great riches to the Company; soap was made from the blubber of the Spitsbergen whales to wash the laces and ruffs worn by the English ladies and gentlemen of that time.

As the Muscovy Company had given up the search for China, Hudson went to work for a Dutch company; he took command of

another ship, the *Half-Moon*, in which he once more undertook to find the way to China. For the third time he tried to pass the great ice barrier at the North Pole, and then, finding it as hopeless as before, he turned his course westward. He sailed for several weeks, and after many adventures reached the coast of America, which he began to explore. He found the mouth of a great river, now called the Hudson River, in honour of him. He thought it was a strait of sea which would lead out into the Pacific Ocean, so he sailed up it; he had gone a hundred and fifty miles before he realised that he was in a river. Then Hudson turned back, and a month later he brought his ship to Dartmouth. Finding that he was working for a Dutch company, the English government forced him and all the Englishmen of his crew to remain in England, while his ship went on to Holland without him.

When the English people heard of Hudson's discoveries in the New World, as America was then called, they formed another company to provide him with money and a ship to explore farther. In 1610 Hudson set out in the *Discovery* on his fourth and last voyage to find China. Again he sailed westward across the Atlantic Ocean, reached America, and sailed along the coast till he came to a strait, now called Hudson Strait. A bitter winter then set in, Hudson drew his ship into a little bay where she was soon frozen in, and where she was forced to stay till midsummer of the next year, 1611. When at last the ice-bound *Discovery* was set free, the sailors, who had suffered a great deal from the cold and lack of food during the long winter, quarrelled with their captain. Hudson and his son, John, together with two or three sick men, were forced by the other sailors into a little boat and set adrift, while the *Discovery* sailed home without them, June 22, 1611. They were never heard of again. When the *Discovery* at last reached England, the few sailors who were left on her were put into prison for a time for their wicked deed, while some ships were sent to look for Hudson and his son.

It is a sad ending to the story of a brave man Although Hudson never found the way to China, his voyages were of great service to England and to the world. His first and second journeys opened the English whale-fishing grounds at Spitsbergen; his third voyage led to the founding of the city of New York—the commercial capital of the United States—by the Dutch; and his fourth led to the starting of a company in England, called the Hudson's Bay Company, which traded in furs from the land he had found.

Sir Walter Raleigh, October 29

Walter Raleigh (*c.* 1552–1618) was born in a pretty thatched farmhouse of Hayes, overlooking Budleigh Salterton Bay, in Devonshire Little Walter Raleigh was brought up within sight and sound of the sea, and he grew to love it He would wander down to the beach and listen to the wonderful tales told by sailors who had been on long voyages across the great Atlantic to the newly discovered land of America. The boy would gaze out across the waters, longing to cross them and to see for himself all the wonders of which the sailors told.

When he was fifteen he was sent to college in Oxford, but he did not stay there long, for the next year he crossed the sea to fight in France. After four years of adventure, he came home and spent some time studying and writing poetry. His great longing, however, was to travel and discover new lands. Men were still trying to find a way to the rich eastern countries by sea, which would bring their cargoes of silk and spice more quickly to Europe. Raleigh helped his half-brother, Gilbert, to fit out some ships to find a way to China. But the Spaniards came to hear of the plan and sent a fleet to defeat the ships, so that Raleigh's first voyage was a failure.

In the next year Raleigh was sent to Ireland in command of a hundred soldiers to

help in putting down a revolt of the Irish people. He showed himself to be a splendid soldier, clever and courageous, though very cruel to the enemy, as the custom was in those days. A story is told about his work in Ireland which shows his cleverness and courage. He was sent with ninety men to capture an Irish lord who lived twenty miles away from the camp. Under cover of the darkness Raleigh marched to the lord's castle and placed his soldiers secretly round the walls. At dawn Raleigh went up to the door with only six of his men and found five hundred of the lord's men waiting for them with stones and spears. Raleigh asked to be allowed to enter with one or two of his soldiers to speak with the lord, and somehow managed to smuggle the whole ninety into the house. By threatening to kill their master if his men made trouble, he took the lord captive and marched the twenty miles back with him, starting at midnight, and arriving at the camp as day broke. Soon after this, Raleigh was sent to England with some dispatches for Queen Elizabeth.

At that time Raleigh was a handsome man of thirty years of age, six feet tall, and very broad, with blue eyes, dark hair and a thick curly beard. He was always beautifully dressed in clothes of silk and velvet and delicate lace, trimmed with pearls and silver. He also had charming manners; he was learned and able to talk well. There is a story told about his meeting with the queen which may not be true, but which shows how highly people thought of his good manners. It is said that as the queen was walking in the palace grounds she came to a puddle in the path. Raleigh, who was passing, at once stripped off his beautiful velvet cloak and laid it on the path so that the queen might walk over without soiling her shoes. Whether this story is true or not, we know that Queen Elizabeth was delighted with the handsome and courteous young man, and Raleigh became the favourite among her courtiers. She gave him wealthy positions in the country, showered favours upon him and made him a knight.

But Raleigh's mind was still full of plans for new voyages. He greatly longed to settle some English people in the newly discovered lands of America, and so form English colonies over the sea. The queen would not allow him to leave the court to go himself, so Raleigh planned expeditions and spent his money in building and sending out ships under the command of other men. He first helped his brother, Gilbert, to take some settlers to Newfoundland. Gilbert set off with five ships, taking with him musical instruments and carnival costumes to amuse the savages of the country. But the fogs and bitter cold forced him to return; his ships were caught in a terrible storm and Gilbert was drowned.

Raleigh then sent out an exploring party in two ships to cross the Atlantic. They reached Roan Oke island, on the coast of north America, which they found a very pleasant place, rich in trees and fruits, and with plenty of deer, rabbits, hares and fowls for food. They returned to England with the good news that they had found a splendid place to start a colony. Raleigh was delighted; the queen allowed the new country to be called Virginia, in honour of herself—the virgin queen—and another seven ships were built. In 1585 the fleet set out, carrying more than a hundred men to be the first settlers in the new colony. When they were safely planted in their new home, the ships went home to England, and the captain promised to return in a year's time with fresh supplies.

But the settlers wasted their time. Instead of clearing the land and building, they tried to get rich quickly by digging for gold. They also got on bad terms with the Indians living there, and soon they were in danger both of starvation and of being killed off. When Sir Francis Drake happened to call with his fleet at the new colony, the settlers begged to be taken back to England. Drake gave them a ship and they sailed home again. A day or two later the ships from England

arrived with their supplies and found no one there.

Raleigh was greatly disappointed when his settlers came home. He at once set to work to furnish more ships, and the next spring he sent out one hundred and fifty householders, with women and children, to start the colony again. These people landed on Roan Oke island, built themselves a fort to protect them from the Indians, and were never heard of or seen again! Later, a ship called at the island and found no white people there. It was thought that they must have been killed by the Indians But some people now believe that they went to live among the Indians, because an Indian tribe has been found whose people look rather like Englishmen and speak some English words.

All Raleigh's plans to make an English colony failed Yet he never forgot the fair country of Virginia, he said, "I shall yet live to see it an English nation" And this was true, for other men did manage to start a settlement in America before Raleigh died, though it was not at Roan Oke island. Tobacco was first brought to England from Virginia by Raleigh's ships, and Raleigh was one of the first Englishmen to set the example of smoking The trade in tobacco from Virginia afterwards became a great source of riches to England

Soon after this, Raleigh's place as favourite with the queen was taken by the earl of Essex He further displeased her by daring to fall in love with one of her maids-in-waiting Elizabeth put the lovers into prison although she soon set them free Then they were married and settled down in a house in Dorsetshire where a son was born to them.



SIR WALTER RALEIGH

Picture at Knole

At that time seamen were telling wonderful tales of a "Golden City" which lay in South America, where much treasure was to be found Raleigh next planned a voyage to find the "Golden City," and set out himself in command of his ships No "Golden City" was to be found, however, and after exploring as far as he could, Raleigh returned to England and wrote a book about his journey. The queen welcomed him back and sent him in command of a fleet in two battles against the Spaniards, in which Raleigh again showed much bravery and skill

But soon the old queen died, and the new king, James I, was not friendly to Raleigh

He suspected Raleigh of joining in a plot against him, and unjustly imprisoned him in the Tower for thirteen years. Raleigh was allowed to have his wife and children with him in the Tower. He spent his time in making chemical experiments and in writing a *History of the World* for the young prince, Henry, of whom he grew very fond The prince was deeply grieved to see how Raleigh was treated. "No man but my father," he said, "would keep such a bird in such a cage" Further sorrows were in store for Raleigh, for the young prince died, and the *History of the World* was never finished From his chemical experiments, Raleigh was able to make the young prince a medicine which soothed his dying hours.

During his dark days in prison, Raleigh frequently begged the king to allow him to go once more to seek for the Golden City At last, at sixty-four years of age, and weakened by his long imprisonment, Raleigh set out with a fleet promising to bring back gold from South America, and agreeing not to quarrel with the Spaniards who owned land there. That was Raleigh's last voyage, and a sad one. He found that there was no "Golden City," his son was killed, and he disobeyed the king by fighting the Spaniards. The king of Spain demanded that he should be punished, and on coming back to England, Raleigh was sentenced to be executed.

He died with great calmness and courage. When he was brought to the block, he felt the edge of the axe, and said, "It is a sharp medicine to cure all my diseases." He would not be blindfolded, but told the headsman to strike when he put out his hands. He gave the signal, but the headsman hesitated. "What dost thou fear?" cried Raleigh. "Strike, man, strike!" The blow fell, and so perished one of the greatest men of the days of Queen Elizabeth, October 29, 1618. We remember Raleigh with pride for many things; for his books, his charming poems, his victories and discoveries, but most of all because he was the man who first set Englishmen thinking of making homes in new lands. His own colonies failed, but other men were afterwards able to work out his ideas, and make settlements overseas, so that we may call him the "Founder of the British Empire"

In Exile

Where the remote Bermudas ride
In the Ocean's bosom unespied,
From a small boat that rowed along
The listening winds received this song.
' What should we do but sing his praise
That led us through the watery maze,
Where he the huge sea-monsters wracks
That lift the deep upon their backs,
Unto an isle so long unknown,
And yet far kinder than our own?
He lands us on a grassy stage,
Safe from the storms and prelates' rage:
He gave us this eternal spring
Which here enamels everything,
And sends the fowls to us in care
On daily visits through the air.
He hangs in shades the orange bright
Like golden lamps in a green night,
And does in the pomegranates close
Jewels more rich than Ormus shows·
He makes the figs our mouths to meet,
And throws the melons at our feet,
But apples plants of such a price,
No tree could ever bear them twice.
With cedars chosen by his hand
From Lebanon he stores the land,
And makes the hollow seas that roar
Proclaim the ambergrease on shore.
He cast (of which we rather boast)
The Gospel's pearl upon our coast,
And in these rocks for us did frame
A temple where to sound his name.
O let our voice his praise exalt
Till it arrive at heaven's vault,
Which thence (perhaps) rebounding may
Echo beyond the Mexique Bay!'
Thus sang they in the English boat
A holy and a cheerful note·
And all the way, to guide their chime,
With falling oars they kept the time

Marvell.

Captain John Smith, June 21

John Smith (1579-1631) is the best known of the early settlers of Virginia He was a farmer's son, born at Willoughby, in Lincolnshire. Life was very quiet and peaceful in the country village which was his home, but from time to time stirring news would come of the great events that were taking place in the outside world. John's uncle was a sailor who served under Sir Francis Drake, and sometimes this uncle would come to the boy's home and tell thrilling stories of the strange lands which he had seen on his travels, and of the great sea fights in which he had taken part.

Home and school seemed dull places to little John after hearing his uncle's stories, and he decided that when he grew up he would leave the farm and see these distant lands for himself. The thought of the sea was always in his mind, and when he was only thirteen he sold his school books and satchel in order to have money to set out on his travels. He could not start at once, however, for his father died and the guardian in whose charge John was left thought that he would do better as a clerk in an office. But John could not endure this indoor life and he persuaded his guardian to let him go to France

He was now sixteen years of age, and then began the most wonderful adventures that ever befell a boy. He fought in the religious wars which were going on in France and Holland, but it seemed wrong to him to kill those who were Christians like himself, so he decided to offer his services as a soldier in the wars against the Turks, and he set out for the East.

He met with many adventures by the way. Once he took ship with some pilgrims going to Rome. A fierce storm arose and the pilgrims, declaring that it was caused by John Smith, threw him overboard to drown. He was rescued and at last arrived outside a Turkish city which the Christians were besieging

One day a Turk, mounted on a strong war horse, rode out before the besieged city and challenged any Christian to mortal combat. Lots were drawn to decide who should fight him and the lot fell to John Smith.

At the appointed time the Turk rode out, splendidly dressed in shining armour and with great wings made of eagle's feathers fastened to his shoulders by clasps studded with jewels. A formidable foe he seemed indeed, but a thrust from John Smith's unerring lance sent him to the ground and his beautiful wings were draggled in the dust.

The next day the dead Turk's best friend challenged Smith, and again the Englishman was victorious Then Smith himself challenged the Turks and their bravest warrior came out to battle, only to fall as the others had done Such were some of the brave deeds of this young soldier of fortune who at the age of only twenty-six came home to England a hero with a thousand gold pieces in his purse.

John Smith could not stay quietly at home, and soon he began to look round for new adventures He heard of a band of Englishmen who intended to sail to Virginia, in America, to make new homes for themselves there, and he decided to go with these colonists.

It was a dangerous and difficult enterprise on which they were setting out. Several times already colonists had set out to try to found a colony in America, but each time the attempt had ended in failure Some of the colonists had died of hunger and hardship, others had been put to death by the Indians and some had come home in despair. But John Smith and his friends were not afraid of difficulty and danger and they determined to try once more.

In 1606 three little ships were ready with forty sailors to man them, and about a hundred men. These men were not farmers and carpenters, however, who would know how to grow grain and build houses in the new land. Many of them were worthless fellows who had not been able to make a living at home. There were only a few who really meant to do their best, and the best man

among these was John Smith Trouble was soon bound to arise between those who cared about the colony and those who thought only of themselves. John Smith did not like the way some of the colonists behaved, and he said so This did not please them and they put him in chains, meaning to hang him when they reached America.

On April 26, 1607, the colonists landed in Chesapeake Bay. The captain of one of the ships carried a sealed box in which were the names of those men who had been chosen in England to govern the new colony. As soon as all had landed, this box was opened and it was found that John Smith, whom the colonists intended to hang, had been chosen as one of the nine men who were to form a council of government. There was nothing for it but to take off his chains and allow him to share in the life of the colony But all the time that he was in Virginia his life was made bitter by the jealousies and hatred of his mean-minded fellow colonists, who knew that he was a finer and nobler man than they were, and who hated him all the more because they knew it.

The first few months saw nothing but misfortunes There was not enough food, for the grain which had been brought in the ships had gone mouldy and the Indians distrusted the white men and would not sell them food Sickness fell upon the colonists, and many of them died John Smith himself was taken ill. Worst of all, the colonists began to grumble and mutiny, and it seemed as if those who escaped death from hunger and disease might kill one another, and so the colony would come to a miserable end.

Then John Smith took command. Recovering from his sickness, he set to work to save the colony. It was too late in the year to plant grain, so while the colonists worked hard as Smith directed them, building houses for themselves and storehouses for food, he himself risked his life among the treacherous Indians to exchange cloth and other things for grain He attended to everything, the building, the buying, the selling and the colonists' behaviour.

On one of his visits to the Indians in search of food the colonists nearly lost their deliverer for ever. He went up the river Chickahoming for some distance by boat, and then, telling his crew to wait for him, he went ashore to trade with the Indians The colonists disobeyed his orders, and when he returned the boat was gone and John Smith was left alone and defenceless far from the safety of the camp. In this plight he was captured by an enemy tribe of Indians.

For weeks he lived in fear of torture and death. At last he was brought before Powhatan, the chief of the Indian tribes in that district, who ordered him to be beaten to death. The Indians seized him, laid his head on a stone and raised their heavy clubs to dash out his brains. John Smith gave himself up for lost But help was at hand. The chief's daughter, Pocahontas, a girl of twelve or thirteen, loved the brave captain and, rushing forward, she flung her arms around him and laid her head on his so that the Indians might not kill him Powhatan yielded to his daughter's entreaties and sent Smith back laden with presents to the English camp

Again and again this noble young girl was able to help the brave captain, and later she married one of his men and bore him a little son. Smith said that Pocahontas was the good angel who watched over his life.

Smith went out on many exploring expeditions in an open boat, and he and his party travelled three thousand miles in it and met many adventures At length, in 1608, the man who had saved the colony became president of the council and the most important man in Virginia As president Smith worked harder than ever. He made the colonists build a church, a drill-ground, a fort, boats, barns and storehouses. He showed them how to keep pigs and poultry. He taught them to manufacture soap and glass, and sent it home to England, together with cargoes of cedar wood Every man in the colony had to work or to go without food Captain Smith was very strict



CAPTAIN JOHN SMITH

From the Map of New England in his "Generall Historie of Virginia," 1624

with the colonists. If he heard one of them swearing he would pour cold water into his sleeve for every bad word he had used In this way he made the men obey him and live good and useful lives.

The Indians loved John Smith and would do anything for him. But his own men hated him and were always plotting and making false accusations against him. They even sent home to England lying reports of how he was governing the colony, so that a new governor was sent out to take his place and Smith returned home to England ill in body and in disgrace. When he reached England, however, he found himself a hero and his name was on everyone's lips.

John Smith never went back to Virginia again, but he explored other parts of America, which he named New England. After this he came home to England once more and settled in London, where he spent his time writing books about his amazing travels and adventures

The Indians in Virginia had not forgotten the kindly captain. One day, as John Smith was walking down the Strand in London, he saw a tall Red Indian coming towards him, dressed in his native blanket and moccasin slippers. As their eyes met, the faces of the two men broke into smiles of welcome, for the Indian was a warrior of Powhatan named Uttamatomakkin He brought good news for Captain Smith. He had come over to England with Pocahontas, the dusky Indian princess, who had befriended Smith so long before. She had crossed the sea with her father, her English husband and their little son

The captain led the Indian into a quiet side street to talk. These are some of the things they said

Indian There are a great many people in your country.

Captain. Why, so I always told you.

Indian. Powhatan bade me count the number of the people, and when I arrived at Plymouth I got a stick and made a notch on it for every man I met.

Captain. You must soon have got tired!

Indian. Aye. It would need too great labour and too many sticks to count all the people of England. My chief also bade me ask you to show me the God of England and the king and queen.

Captain. I cannot show you our God, for He is the God of the whole world, and no man hath seen Him at any time, but I will tell you about him.

John Smith longed to see Pocahontas again, and the Indian arranged a meeting. She was overjoyed to see the captain once more, for his enemies had told her that he was dead. What a joyful meeting it must have been! It is sad to tell that in the next year Pocahontas fell ill and died, and was buried in Gravesend church.

The end of John Smith's life was as peaceful as the first part had been adventurous He spent his time writing about the new lands overseas, and urging more colonists to go out and settle there. He persuaded many to do so, and thus more and more settlements were made in America. By this time John Smith was growing old, and on June 21, 1631, he died and was buried in St. Sepulchre's church, London. But the memory of the gallant man, "sometime Governor of Virginia and Admiral of New England," will always be remembered because he did so much to found the new and greater Britain overseas.



RED INDIAN

Captain Matthew Flinders, July 19

Captain Matthew Flinders, R.N. (1774-1814), memorials of whose work are to be found on many points of the Australian coast, was the son of a surgeon in Lincolnshire. He was also meant to be a doctor, but the reading of *Robinson Crusoe* filled him with an irrepressible longing to go to sea and explore far-away lands

He entered the navy, and studied so earnestly that he qualified for a master's certificate without any outside help at all His first long voyage was into the South Seas with Captain William Bligh to investigate the possibility of transplanting bread-fruit to the West Indies In 1794 he was in Lord Howe's famous squadron which defeated the French so signally on "the glorious first of June."

1795 finds him leaving for Australia as a midshipman on the *Reliance*, the vessel which brought Governor Hunter out to New South Wales. During the voyage he formed a fast friendship with the ship's surgeon, a young man named George Bass On arrival at Sydney the two friends began a series of adventurous coastal trips in very small boats, exploring and charting the harbours and river mouths near Port Jackson. Governor Hunter encouraged them in their self-imposed tasks, and provided them with better boats. Bass sailed alone as far as Westernport and showed that, in all probability, Van Diemen's Land was not joined on to the mainland. The two friends then proved this beyond all doubt by circumnavigating Van Diemen's Land in 1798. Shortly afterwards Bass went off on an expedition to South America, was captured by the Spaniards and was never heard of again, probably dying in the silver mines.

Flinders returned to England in 1800, but was immediately appointed to the command of the *Investigator*, a vessel specially fitted out to undertake the complete exploration of the Australian coast. No more congenial task could possibly have confronted Flinders He arrived off Cape Leeuwin in December, 1801, and sailed carefully along the whole south coast of Australia, mapping and naming as he proceeded, until he reached Sydney. In 1803 he sailed completely round Australia in the *Investigator*, giving particular attention to the eastern and northern sides. He was thus able to draw a correct map of the whole continent, and it was he who suggested *Australia* as a more suitable name than *New Holland*.

By this time the *Investigator* had become so rotten that her further employment was impossible. Flinders decided to return to England, publish details of his work, and start afresh with another vessel So sure was he of speedy return, that he arranged for his ship's company to wait for him in Sydney. The first vessel on which he sailed for England was wrecked, and he made his way back to Port Jackson in an open boat The authorities then sent him home on a twenty-nine ton schooner which, after many adventures, was forced to put into Mauritius for shelter and repairs. Mauritius was a French island, and at that time France and England were at war. However, Flinders possessed an explorer's special passport, which he presented to General Decaen, the governor of the island. Decaen, being suspicious of the passport, and thinking that this officer might be a spy, detained Flinders, but relented and asked him to have dinner with him. Flinders, furious at the suspicion with which he had been regarded, refused to go. From this unfortunate incident a breach occurred between the two men, and Flinders was kept at Mauritius for nearly seven years.

In 1810 he was released, to return to England and work eagerly upon his beloved charts and his *Voyage to Terra Australis* In three years the work was finished, but Flinders' health was entirely broken down. He died, at the early age of forty, on the very day when his book was published, but he was unconscious and never saw a copy.

His charts were beautifully executed, and wonderfully accurate in detail when we consider the rough conditions under which

he did his work. They are the basis of the navigating charts used in Australian waters at present

Matthew Flinders is Australia's great hero, and the noble statue of him in front of Melbourne's cathedral is one of many tributes paid to his memory by the people of his *Terra Australis.*

Robert O'Hara Burke, June 27

Robert Burke (1820-1861) was the leader of a small expedition which accomplished the wonderful feat of crossing the Australian continent from north to south. Burke was born at St. Cleram, County Galway, Ireland. For some time he was a soldier in the Austrian army, but in 1848 he returned to Ireland and joined the Royal Irish Constabulary. Five years later he emigrated to Tasmania, and soon afterwards crossed to Melbourne, where he became an inspector of police. South Australia had offered a prize of £10,000 to anyone who, at his own expense, should find his way across Australia to the northern ocean In spite of many gallant attempts by brave men, the reward was still unclaimed by 1860. Two years before, an exploration committee of Victoria organised an expedition which left Melbourne on August 21, 1860. A considerable sum of money had been subscribed, provisions and supplies of all kinds sufficient for a twelve months' journey were prepared and every detail of necessary outfit was provided An agent of the committee had brought twenty-four camels and a few native drivers from India, for camels were best fitted as transport animals over the parched lands of central Australia Burke was chosen leader of the expedition, with William John Wills as surveyor and astronomical observer. Ten Europeans and three Sepoy camel drivers accompanied them.

Ten thousand people gathered in the Royal Park, Melbourne, to see the party parade before setting out on the journey. No camels had, so far, been seen in Australia, and naturally these animals attracted a good deal of attention. Everyone was happy and enthusiastic, hoping for great and wonderful discoveries to be made. Were there mighty rivers, lofty mountains and wide lakes in Australia? Were there grasslands and forests? No one knew, and the people hoped to hear great news of the wonders of central Australia. Unfortunately, soon after the start, a quarrel arose between Burke and his second in command, who returned home, and Wills took his place. The larger part of the expedition was left behind at the Darling river, while Burke, Wills and six men, with fifteen horses and sixteen camels, went on to Cooper's Creek, in Queensland. Here Burke made a depot and he despatched one of the party, named Wright, to go back and bring up more camels and further supplies. Six weeks went by, and no sign was seen of Wright and his supplies. Burke day by day grew more and more restless at the delay and at last he decided to wait no longer, but to push on for the north. He divided his party of eight into twos, four men were left at Cooper's Creek, and Burke, with Wills, King and Gray as companions, with six camels, two horses and provision for three months, set out to complete the journey across the continent.

They left the depot on December 10, and on February 4, 1861, Burke and his party, terribly worn down, reached the mangrove swamps at the estuary of the Flinders river, which runs into the Gulf of Carpentaria For the first time the Australian continent had been crossed from shore to shore, but an immediate return was necessary, for the explorers' provisions were running very low. Slowly and painfully they retraced their steps. Day by day they grew weaker through lack of proper food. On April 16, Gray fell ill and died and the emaciated survivors halted a day to bury his body. That day's delay, as it unfortunately turned out, cost Burke and Wills their lives. They saw that unless they made forced marches and pushed on with all possible speed there was little hope of

provisions lasting out. Leaving everything behind except their firearms and a little meat they hurried on as best they could across the stony desert. Utterly exhausted they arrived at Cooper's Creek, stumbled more dead than alive into the stockade and found the place empty. Men, horses, camels, tents, all had disappeared.

A search was made round the camp and suddenly Wills saw cut in the bark of a tree the words· "Dig, 21 April, 1861" Feverishly they dug, and unearthed a box of provisions and a letter from Brahe, who had been in charge of the depot The letter ran—"The depot party of the Victorian Exploration Expedition leaves the camp to-day to return to the Darling. I intend to go south-east from Camp 60, to get into an old track near Balloo. Two of my companions and myself are quite well; the third—Paton—has been unable to walk for the last eighteen days, as his leg has been severely hurt when thrown by one of the horses. No one has been up here from the Darling. We have six camels and twelve horses in good working condition."

On the very day that Brahe's party had left the depot Burke and his companions had stumbled in The one day's delay in burying their poor friend had caused them to miss their relieving party. They wrote a letter and returned it to the box and carefully covered it up again, so carefully indeed that when Brahe returned later to see if there were any signs of Burke having been there, he thought that the box had not been disturbed, and he was ignorant of his whereabouts. Burke, in despair, took another route than that which they had followed on the outward journey, hoping against hope to reach home in time. The food that they took with them soon gave out and starvation faced them once more. Wills made his way back to the depot and left a note in the box, as follows:—"We have been unable to leave the creek Both camels are dead. Mr. Burke and King are down on the lower part of the creek. I am about to return to them when we shall probably come up this way. We are trying to live the best way we can, like the blacks, but find it hard work. Our clothes are fast going to pieces. Send provisions and clothes as soon as possible. William J. Wills."

The words "the best way we can, like the blacks" refers to flour made from pounded seeds of a kind of clover, of which scarcely enough for a meal could be gathered in a day. If time had been spent in gathering the seeds and pounding them into flour it would have been impossible to get any farther on the way. The wretched men not only suffered from want of food but also from want of clothes, which had long since been reduced to rags. At last Wills' strength utterly failed He was left under a tree with a plentiful supply of water while the others went in search of native blacks, if it chanced that any could be found Alone in the wilderness, the gallant traveller died, calm and resigned to his fate. The next day, June 27, Burke also succumbed, and at his own request was left unburied. King, who somehow managed to stumble on, came up with a party of natives who took pity on him and kept him for two months, when he was rescued by one of the relief parties sent out to look for any chance survivor. The remains of both Burke and Wills were taken back to Melbourne, where they were accorded a public funeral, and later a splendid monument was erected in memory of the men who took a leading part in the First Crossing of Australia.

David Livingstone, May 1

David Livingstone (1813-1873) was a Scottish missionary and explorer. As a little Scots boy ten years old, David was sent to work in a cotton factory at Blantyre Works, Lanarkshire. His parents were poor people who could not afford to keep their children at school for long, and David was obliged to begin earning his living at an age when all children to-day are still learning their lessons.

David did not want to leave school, for he loved his lessons, and while he worked he kept a book on the bench beside him so that he might read a page now and then. He earned very little money, but out of that little he managed every week to put aside some, and so his little hoard of savings grew till there was enough money for him to go to college

Why did David Livingstone wish to go to college? He had a great dream in his mind. News had come to his home in Scotland of the wonderful work that was being done in Africa by Dr. Robert Moffatt, the missionary. Africa was called in those days the "Dark Continent," for very little of it had been explored and it was inhabited by heathen tribes who knew nothing of Christ and worshipped their gods in dark and dreadful ways. It was among these heathen that Dr. Moffatt was working, letting light into their minds and helping them to give up their evil way of life for a nobler and purer one. Men who do this work of spreading the gospel of Jesus Christ among the heathen are called missionaries.

The great desire of David Livingstone's heart was to become a missionary like Dr. Moffatt For thirteen years he worked hard all day in the factory and then, tired as he was, went to school in the evening, till at last he had saved enough money and had learnt enough to be able to go to college in Glasgow There he studied hard, and at the end of two years went up to London to visit the London Missionary Society, a society which sent out missionaries to heathen lands. To Livingstone's joy the Society decided to send him out to Africa.

He went back first to Glasgow and there learned to be a doctor, so that he might be able to attend to the bodies as well as the souls of the African natives Then, in December, 1840, he sailed from England It was sixteen years before he saw his native land again.

Arrived in Africa, Livingstone travelled north to join his hero, Dr. Moffatt, in the home which he had made for himself among the natives in Bechuanaland. There for nine years the young missionary lived and worked, and there he met the doctor's daughter, Mary Moffatt, and fell in love with her. They were married, and went to live in a house which Livingstone himself had built.

Many adventures befell Livingstone during those first years in Africa Once he narrowly escaped being killed by a lion which he had wounded. The fierce animal rushed upon him and seizing his shoulder in its powerful jaws crushed the bone between them A strange feeling of drowsiness fell upon the missionary as he lay waiting for death. Suddenly a shot rang out, and the lion fell dead with a bullet through his body. A friend had arrived just in time to save Livingstone's life. The missionary never forgot his narrow escape, for during the rest of his life the shoulder which the lion had torn frequently gave him pain.

Several children were born to David and Mary Livingstone, but there was no school for them to go to in the wilds of Africa, and the parents at last decided that Mrs. Livingstone must take the children home to England to be educated. Their father went with them to Cape Town to see them off and then came back alone to carry on his work.

He saw that what was needed was for some brave and hardy explorer to go into the unknown parts of the continent, both to teach the natives and to open up the way so that other missionaries and explorers might follow where he led. Livingstone accordingly decided to make a journey across Africa from east to west and back again from west to east between the Atlantic and Indian oceans.

It was a fearsome undertaking for a man, this journey across unknown land, facing appalling dangers from wild beasts and wilder men, tearing a path through tangled forests and crossing rivers and treacherous swamps, but somehow in four years it was accomplished. Part of the time Livingstone and the native boys who carried his luggage,

the food, his precious medicine chest, and the still more precious books in which he wrote down all that he saw, travelled along the great Zambezi river. On this river they discovered one of the greatest natural wonders of the world, the mighty waterfall which Livingstone named the "Victoria Falls," in honour of Queen Victoria.

After this long journey Livingstone was so ill and exhausted that he was obliged to go home to England for a rest. How glad his wife and family must have been to have him with them again! All England welcomed the great missionary explorer as a hero, and as everyone wished to hear the story of his travels he wrote a book called *Missionary Travels and Researches in South Africa.* So many people bought it that soon Livingstone had plenty of money, enough to enable him to settle down in England.

But the wizard land of Africa had laid her spell upon him, and when he was asked if he would go back again he could not refuse After only three months at home he was once more in the Dark Continent, setting out on another journey of exploration. This time he discovered several unknown rivers and lakes, but the journey was saddened for him by the death of his beloved wife, who had come out from England to join him Soon afterwards he came home again once more.

Livingstone set out on his last journey with a grand outfit, containing thirty-six men as well as camels, mules, buffaloes and donkeys. Gradually, however, these disappeared, and at last Livingstone was left with only four or five boys. He journeyed steadily on, noticing and making maps of the country through which he travelled and noticing other things as well which made his heart ache—the bones of dead Africans who had been captured and driven toward the coast to be sold as slaves by the slave dealers, but had died of hardship on the way.

Men have not always thought it wrong to have slaves, but in Livingstone's day people were beginning to realise how cruel and wicked it is to buy and sell men as if they were beasts, and Livingstone determined to do all he could to stop this cruel trade. He was so stern to all the slave dealers whom he met that they were afraid of this righteous man, and even the most cruel of them, whose name was Tippoo Tib, would not go slave hunting if he heard that Livingstone was near. In the end, because the explorer spoke so sternly and wrote stories of the horrible cruelties he had seen practised on slaves, the slave trade in Africa began to die out, and is now at an end all over the continent.

During his travels Livingstone explored lands which no white man had ever seen before, but one trouble after another came upon the little party. First the four goats which supplied them with milk wandered away and were lost. Then one of the natives stole the doctor's precious medicine chest, so that when he fell ill from the fever, which affects so many white men in hot countries, there was no medicine to cure him. He grew worse and worse, till at last he seemed like a bag of bones. In this feeble state, famished and fever-stricken and sick with disgust at all the horrors of the slave trade which he had seen, the weary traveller stumbled into a native town named Ujiji with no provisions and no medicines, himself more dead than alive.

Meanwhile, no news of the explorer had reached the outside world for so long that it was feared that he must be dead Europe and America were in a fever of anxiety. At last the owner of an American newspaper sent for another explorer, Henry Morton Stanley.

"Take all the money you need," he said, "and go and find Livingstone."

Stanley did so. He sailed to Africa, gathered a number of men, bought quantities of food and other necessaries and set out to find the lost explorer. For nine months he wandered, and five days after Livingstone had tottered into Ujiji he heard shouts as he lay in his hut, and came out to find a tall white man standing in the sunshine

It was a meeting which will never be forgotten as long as stories of travel are read. In his joy at finding the man whom he had sought for so long Stanley could have seized him in his arms. But so strong were his feelings that they almost choked him and he could only stammer out, "Doctor Livingstone, I presume?" for all the world as if the two men had just met at a polite tea party instead of in the heart of tropical Africa.

Even Livingstone, ill as he was, could not help smiling at this shy greeting which sounded so strangely out of place. The two men were soon fast friends, the good food and medicines which Stanley had brought restored Livingstone to health, and they went on exploring trips together.

At last Stanley felt that he must return home, and he begged Livingstone to come too. But the doctor shook his head. "I cannot leave Africa," he said. Stanley was obliged to leave him behind, with an ample supply of food and other necessary things.

The heroic explorer, who was now nearly sixty years old, set out once more, but he had not gone far when once again he fell ill. He insisted on travelling farther, but the fever grew steadily worse, till he was obliged to submit to being carried in a litter. At last he could go no farther and was forced to stop at a village called Ilala Here his faithful followers built him a hut in which to die. "I am very cold," said Livingstone when they laid him in it. "Put more grass on the hut."

On the morning of May 1, 1873, the boys who came in to waken their "great master," as they called Livingstone, found him kneeling by his bedside as if in prayer. But when they came closer they found that he was dead. His spirit had passed away as he was praying.

The natives knew that Livingstone would wish to be buried among his own people They dried his body in the sun to preserve it from decay and carried it with great difficulty hundreds of miles to the coast, whence it was sent home to England and buried in Westminster Abbey, whither hundreds of English men and women came to mourn the death of the great missionary explorer. The motto of his life was the advice he gave to some school children in Scotland—"Fear God, and work hard."

The following notes on native life in Africa were made by Livingstone during his journey which began from the west coast of Africa at the mouth of the river Bengo in 1854.

The Life of African Women.—The markets or sleeping-places were well supplied with provisions by great numbers of women, every one of whom came spinning cotton with a spindle and distaff, exactly like those used by the ancient Egyptians. A woman is seldom seen going to the fields without being engaged in this employment at the same time that she carries a pot on her head, a child on her back, and a hoe over her shoulder. The cotton was brought to market for sale, and I bought a pound for a penny, which was probably double the price they ask from each other. We saw the cotton growing luxuriantly all around the market-places and the native huts, from seeds dropped accidentally; so far as I could learn, it was the American cotton rendered perennial by the influence of the climate.

The women spin and the men weave. Each web is about five feet long and fifteen or eighteen inches wide. The loom is of the simplest construction, being only two beams placed one over the other, the web standing perpendicularly.

The Slaves.—My host, Mr. Canto, the Commandant, having been seized with fever in a severe form, I had an opportunity of observing some of the workings of slavery. When a master is ill the slaves run riot among the eatables. I did not know this until I observed that every time the sugar basin came to the table it was emptied On visiting my patient by night I unexpectedly came upon the washerwoman eating pineapples and sugar All the sweetmeats were devoured, and it was difficult for me

to get even bread and butter until I took the precaution of locking the pantry door. Upon this they took to killing the fowls and goats, and, when the animal was dead, brought it to me, saying "We found this thing lying out there," and then enjoyed a good feast of meat.

Alligators.—A slave boy belonging to Colonel Pires, having stolen and eaten some lemons in the evening, went to the river to wash his mouth, so as not to be detected by the flavour. An alligator seized and carried him to an island in the middle of the stream; there the boy grasped hold of the reeds, and baffled all the efforts of the reptile to dislodge him, till his companions came in a canoe to his assistance, when the alligator at once let go his hold. The boy had marks of the teeth in his abdomen and thigh, and of the claws on his legs and arms.

A Beautiful Scene.—I have often thought, in travelling through this land, that it presents pictures of beauty which angels might enjoy. How often have I beheld, in still mornings, scenes the very essence of beauty, and all bathed in an atmosphere of delicious warmth, to which the soft breeze imparts a pleasing sensation of coolness as if from a fan! Green grassy meadows, the cattle feeding, the goats browsing, the kids skipping, the groups of herd-boys with miniature bows, arrows, and spears, the women wending their way to the river with watering-pots poised jauntily on their heads; men sewing under the shade of the banians; and old grey-headed fathers sitting on the ground, with staff in hand, listening to the morning gossip, while others carry branches to repair their hedges. Such scenes, flooded with the bright African sunshine, and enlivened by the songs of birds, before the heat of the day has become intense, form pictures which can never be forgotten.

Trouble with the Natives.—It happened that the headman of the village where I had lain had been struck on the mouth by one of my men while bargaining in my camp for a piece of meat. My principal men paid five pieces of cloth and a gun as an atonement; but the more they yielded the more exorbitant he became, and he sent word to all the surrounding villages to aid him in avenging the affront of a blow on the beard. As their courage usually rises with success, I resolved to yield no more, and departed. In passing through a forest in the country beyond we were startled by a body of men rushing after us. They began by knocking down the burdens of the hindermost of my men, and several shots were fired, each party spreading out on both sides of the path I fortunately had a six-barrelled revolver, and with this in my hand I staggered along the path with two or three of my men, and fortunately encountered the chief

The sight of the six barrels gaping into his stomach, with my own ghastly visage looking daggers at his face, seemed to produce an instant revolution in his martial feelings, for he cried out "Oh! I have only come to speak to you, and wish peace only." Mashauana had hold of him by the hand, and found him shaking. We examined his gun, and found that it had been discharged. Both parties crowded up to their chiefs. The enemy protested their amicable intentions, and my men alleged the fact of the goods having been knocked down as evidence of the contrary I requested all to sit down, and then said to the chief: "If you have come with peaceable intentions, we have no other, go away home to your village" He replied: "I am afraid lest you should shoot me in the back" I rejoined "If I wanted to kill you, I could shoot in the face as well." Mosantu called out to me: "That's only a Makalaka trick; don't give him your back." But I said: "Tell him to observe that I am not afraid of him;" and, turning, mounted my ox, and took my departure. I mention this little skirmish with the object of showing that the Negro character in these parts is essentially cowardly, except when influenced by success Individually these tribes have but little power, but a partial triumph over any body of men would induce

the whole country to rise in arms, and this is the chief danger to be feared.

More Trouble—On the evening of the 2nd of June we reached the village of Kawawa, consisting of forty or fifty huts, in the midst of a forest. Drums were beating over the body of a man who had died the preceding day, and some women were making a clamorous wail at the door of his hut, and addressing the deceased as if alive. A person fantastically dressed with a great number of feathers, who was intended to represent one of the Barimo, left the people at the dance, and went away into the deep forest in the morning, to return again to the obsequies in the evening.

In the morning Kawawa visited us, and we spent nearly the whole day in conversation with him and his people. When we visited him in return we found him in his large court-house, which, though of a beehive shape, was remarkably well built. As I had shown him a number of curiosities, he now produced a jug of English ware, shaped like an old man holding a can of beer in his hand, as the greatest curiosity he had to exhibit. In the evening I exhibited the pictures of the magic lantern, and all were delighted except Kawawa himself. He showed symptoms of dread, and several times started up as if to run away, but was prevented by the crowd behind.

Nothing could exceed the civilities which had passed between Kawawa and ourselves, but he had heard that the Chiboque had forced us to pay an ox, and now thought he might do the same. When therefore I sent next morning to let him know that we were ready to start, he replied in his figurative way: "If an ox came in the way of a man, ought he not to eat it?" I had given one to the Chiboque, and therefore he claimed the same, together with a gun, gunpowder, and a black robe like one he had seen the day before; if I refused an ox, I was told that I must give one of my men, and a book by which he might see the state of Matiamvo's heart towards him, and which would forewarn him, should Matiamvo ever resolve to cut off his head Kawawa came in the coolest manner possible to our encampment after sending this message, and told me he had seen all our goods, and must have all he asked, otherwise he would prevent us from passing the Kasai I replied that I would never have it said that a white man had paid tribute to a black; and that I should cross the Kasai in spite of him. He ordered his people to arm themselves, and, when my men saw them rushing for their weapons, some of them became somewhat panic-stricken. I ordered them to move away, and took the lead, expecting them all to follow. Many, however, remained behind, upon which I jumped off the ox and made a rush at them with the revolver in my hand. Kawawa ran away amongst his people, who also turned their backs I shouted to my men to take up their luggage and march; and then we all moved in to the forest, the people of Kawawa standing about a hundred yards off, gazing, but not firing a shot or an arrow Kawawa was not to be balked of his supposed rights by the unceremonious way in which we had left him, for, when we reached the ford of the Kasai, about ten miles distant, we found that he had sent four of his men with orders to the ferrymen to refuse us passage. The canoes were taken away before our eyes, and we were supposed to be quite helpless without them, with a river before us a good hundred yards broad, and very deep. Pitsane stood on the bank, gazing with apparent indifference on the stream, but all the while making an accurate observation of the spot where the canoes were hidden among the reeds. After it was dark one of them was quietly abstracted from its hiding place, and we were soon snug in our bivouac on the southern bank of the Kasai. I left some beads, as payment for some meal which had been presented by the ferrymen, and as the canoe was left on the north side of the river, Pitsane and his companions laughed uproariously at the idea of our enemies' perplexity as to who had paddled us across As we were about to

depart in the morning, Kawawa's people appeared on the opposite heights, and could scarcely believe their eyes when they saw us prepared to start away to the south. At last one of them called out: "Ah! ye are bad." To which Pitsane and his companions retorted. "Ah! ye are good; and we thank you for the loan of your canoe."

Elephants.—We entered a most beautiful valley, abounding in large game. I went to secure a buffalo which I saw lying down. Three balls failed to kill him, and, as he turned round as if for a charge, we sought the shelter of some rocks, but, before gaining them, three elephants, probably attracted by the strange noise, threatened to cut off our retreat: they, however, turned short off, and allowed us to gain the rocks. We then saw that the buffalo was moving off quite briskly, and in despair I tried a long shot at the last of the elephants, and broke his foreleg. The young men soon brought him to a stand, and one shot in the brain despatched him. I was right glad to see the joy manifested at such an abundant supply of meat.

On the following day, while my men were cutting up the elephant, great numbers of the villagers came to enjoy the feast. We were on the side of a fine green valley studded here and there with trees, and furrowed with numerous rivulets. Having retired from the noise to take an observation, I beheld an elephant and her calf at the end of the valley, about two miles distant. The calf was rolling in the mud, and the dam was standing fanning herself with her great ears. As I watched them through my glass I saw a long string of my men circumventing them, who, according to Sekwebu, had gone off, saying: "Our father will see to-day what sort of men he has got." I then went higher up the side of the valley, in order to have a distinct view of their mode of hunting. The goodly beast, totally unconscious of the approach of an enemy, stood for some time suckling her young one, which seemed about two years old, they then went into a pond of mud, and smeared themselves all over with it, the little one frisking about his dam in elephantine fashion, while she kept flapping her ears and wagging her tail, as if in the height of enjoyment. Then began the piping of her enemies, which was performed by blowing into a tube, or between the closed hands. They call out to attract the animal's attention—

"O chief! chief! we have come to kill you.
 O chief! chief! many more will die beside
 you," etc.
"The gods have said it," etc. etc.

Both animals expanded their ears and listened, then left their baths as the crowd rushed towards them. The little one ran forward towards the end of the valley, but, seeing the men there, returned to his dam, who then placed herself on the danger side of her calf, and passed her proboscis over it again and again, as if to assure it of safety. The men, still shouting, singing, and piping, kept about a hundred yards in her rear and on her flanks, until she was obliged to cross a rivulet. The time spent in descending and getting up the opposite bank allowed of their coming up to the edge, and discharging their spears at about twenty yards distance. After the first discharge she appeared with her sides red with blood, and, beginning to flee for her own life, seemed to think no more of her calf, which soon took refuge in the water, and was killed. The pace of the dam gradually became slower, and at length, turning with a shriek of rage, she made a furious charge back among the men. They vanished sideways, while she ran straight on through the whole party, without coming near anyone except a man who wore a piece of cloth on his shoulders. She charged three or four times, and, except in the first instance, never went farther than a hundred yards. She often stood after she had crossed a rivulet, and faced the men, though she received fresh spears. It was by this process of spearing and loss of blood that she was

killed, for at last, making a short charge, she reeled and sank down dead in a kneeling posture. I did not see the whole hunt, having been tempted away by both sun and moon appearing unclouded. I turned from the spectacle of the destruction of these noble animals, which might be made so useful in Africa, with a feeling of sickness, unrelieved by the recollection that the ivory was mine.

The furious charges of this elephant remind me of an adventure of one who has had more narrow escapes than any man living, but whose modesty has always prevented him from publishing anything about himself. When we were on the banks of the Zouga in 1850 Mr. Oswell pursued one of these animals into the dense thorny bushes on the margin of the river; as he followed through a narrow pathway he saw the elephant, whose tail he had but got glimpses of before, now rushing towards him. There was then no time to effect a passage; the hunter therefore tried to dismount, but in doing this he was thrown on the ground with his face upwards to the elephant, which, being in full chase, still went on. Mr. Oswell, seeing the huge fore-foot of the animal about to descend on his legs, parted them, and drew in his breath as if to resist the pressure of the other foot, which he expected would next descend on his body. He saw the whole length of the enormous brute pass over him, and escaped unhurt.

Sir Henry Layard, July 3

Four thousand years ago Babylon and Nineveh were the greatest cities in the world. But gradually their greatness passed away. Conquerors from other lands captured and burned them and drove their people away, leaving the cities standing as lonely ruins. The rain beat down on them and the sand-storms swept over them, the walls and houses slowly crumbled, and at last there were only great mounds of earth and rubbish to show where once the great cities had stood. By degrees their very names were forgotten. Arabs pitched their tents beside the great mound that had been Nineveh or Babylon, and never dreamed of what lay buried under their feet. For hundreds and hundreds of years the ruins were lost to men, and might still be lying hidden to-day, had not a notable man, Sir Henry Layard, dug them up for us. The story of how he came to find the lost cities is more wonderful than any fairy tale, because it is true.

Henry Layard (1817-1894) was born in Paris. He had a strange childhood. His father was a delicate man, who was often ill and could live only in warm countries. So when little Henry was only three years old, the family moved to Florence, in sunny Italy. Here Henry spent many happy years. The family lived in a beautiful old palace, full of pictures. One of the loveliest of these pictures hung over the bed which Henry shared with his brother. This picture, an altar-piece painted by Filippino Lippi, is now in the National Gallery in London, and if you go to see it you will notice that the canvas of the picture is a little dented. This happened during a romp while the two boys were undressing. Henry threw his shoe at his brother, and the heel hit the picture and did the damage which you can still see.

Florence has many picture galleries full of paintings by the world's most famous artists, and Henry would wander from one to the other, learning to love all old and beautiful things.

When he was still very young, Henry also learned to love travelling. At the age of only eight he travelled alone to a school in France and he went also to schools in England and Switzerland. He learned to speak three languages, English, French and Italian, and he soon spoke them so well that in his French school the boys teased him for being English, while in his English school they laughed at him and called him the Italian boy.

But Henry did not mind. He had learnt to take care of himself, and would often go off for long walks alone. Once, while he was at school in France, he went for a walk and

came to a bridge where anyone who wished to cross had to pay a sou, a small French coin worth about a halfpenny Henry had one sou in his pocket. He paid it, crossed the bridge and went wandering on. At last he felt tired and turned back. When he came to the bridge once more he found that he must pay again to re-cross it, and that he had no more money. Henry soon decided what to do. He went up to an old gentleman who was passing, and asked him for a sou. "I am Henry Layard, sir," he said. "Everybody knows me." The old gentleman was so pleased with the bold little fellow that he gave him the coin at once. Afterwards he met Henry's father and told him of his son's courage. "That boy will do well," he said. "He knows how to look after himself." His words came true, as we shall see

Henry's parents wished him to become a lawyer. This was not at all what he wanted to do himself. It meant sitting indoors reading books instead of seeing new places and beautiful things. However, he did as his parents wished, worked hard and passed his examinations, and then he set out for Ceylon to earn his living.

He did not go to Ceylon by sea, as most people do. Because of his love of travel he planned to make the journey by land, going eastward across Europe and Asia as far as India, and then southward through India till he reached Ceylon.

Layard was only twenty-two when he set out on his long and difficult journey. He travelled slowly, stopping at many places on the way, and wishing more and more that he need not go on to Ceylon but might stay in Asia and explore its unknown countries. All the while, though he did not know it, he was drawing nearer to the lost cities. At last he reached the river Tigris itself, on whose banks they lay buried. As he travelled along the river he met a Frenchman who was digging in the mound that covered a small city. Layard made friends with this man, who showed him one or two things which he had found, bricks with writing on them and parts of the city walls. Layard was so interested by what he saw that he longed to dig up buried cities himself.

Farther up the Tigris he came upon a number of mounds much greater than the small one which his French friend had been opening up Telling his friends about it later, he said, "A great longing came over me to learn what was hidden within them, and I had a kind of feeling that I should one day seek to clear up the mystery"

The longing grew and grew, until at last Layard gave up altogether his plan of going to Ceylon and decided instead to start digging in the mounds. He had a little money with which to pay the workmen. His mother, who was deeply interested in what he was doing, sent him what she could spare, and with this and his own money he set to work.

It was a very difficult and even dangerous task The wandering Arab tribes who lived in the desert country round the Tigris were at war with one another, and Layard and his diggers were often in danger of being killed by the tribesmen The Arabs who lived in the villages round were also unfriendly. Sometimes they attacked the diggers, because they said that the bodies of their ancestors were being dug up At other times the work was stopped for fear Layard should be digging for gold, or be making plans and taking measurements that would help the English to conquer the country and take it from the Turks, to whom it belonged.

In spite of all these difficulties Layard went bravely on with the work. Gradually the Arabs learned to admire his courage, just as, long ago, it had been admired by the old gentleman who had paid his passage over the bridge. He won their confidence, too, by living just as they did He wore Arab dress while at work, and lived in an Arab's mud hut. The hut was divided in half by a thin partition. Layard lived in one half, and the other half was occupied by sheep and goats The roof of the hut let in the rain, and to keep himself dry at

night he was obliged to sleep under the table, and to dig a trench round the floor of the hut to carry off the rain water. In this uncomfortable way he spent his nights, and all day long he was digging with his men in the mounds beside the river.

Soon they began to make discoveries. They uncovered walls and buildings and found bricks and statues and stone slabs with carvings on them. One morning as Layard was going from his hut towards the ruins he saw two Arabs riding toward him as fast as their horses could go "Oh, master," they cried, "come quickly and see what the diggers have found!"

Layard hurried on as fast as he could till he reached the trench in which the workmen had been digging Looking into it he saw a great pile of cloaks and baskets, evidently covering something, while the workmen were gathered round the pile, chattering excitedly When they saw Layard they took off the coverings and showed him an enormous head carved in stone. It looked like the head of a giant rising out of the ground, and the workman who uncovered it had been so frightened that he had thrown down his spade and run away. All the other workmen were afraid, too, for they believed that the great head had been carved long years before by evil giants who were taller than the tallest date tree.

Layard saw at once that it was the head of a statue, and he set his men to clear away the earth round the rest of it. When the whole statue had been dug up, it was found to be the figure of a lion with a bird's wings and a man's head Later on, many more of those strange monsters were dug up, men with eagle's heads, and bulls with the heads of men. These great figures once stood as guardians at the gates of the royal palaces to frighten away evil spirits. These palaces, too, Layard and his band of diggers unearthed.

Layard did not keep his treasures to himself; he decided to give them to the British Museum in London, so that they might be seen by the people who visited that city. With the greatest difficulty the great winged figures and slabs of carved stone were shipped across the sea, and they may be seen to-day in the British Museum.

Layard also wrote books describing his discoveries, and these are some of the most fascinating travel books ever written. Still more was learnt about the people of the lost cities from the bricks covered with writing which Layard sent home These writings were read by clever men, who were thus able to tell us how the people of Babylon and Assyria lived.

When he had finished exploring one mound, Layard went on to the next. At last he had laid bare the great cities of Babylon and Nineveh, as well as some smaller ones. There was nothing more to be done, and he returned to England. There he married, and spent the rest of his life helping to govern England as a member of parliament. As a reward for what he did, he was made a knight, and was known from that time as Sir Henry Layard But amid all the hard and often dull work which a member of parliament has to do, Sir Henry must sometimes have wished that he was back again on the banks of the Tigris digging lost cities out of the sand. He died in London, July 5, 1894.

Cecil Rhodes, March 26

If you go to South Africa you will hear everywhere the name of Cecil Rhodes. Wherever you go, you will see statues and pictures of him, you will probably be shown his beautiful house near Cape Town, and if you are fortunate, his hill-top grave from which you may look out on the wonderful scene called the "World's View." The hill top lies in a country which is called Rhodesia, after this great man.

Who was Cecil Rhodes, and why is he thus remembered everywhere in South Africa? Cecil John Rhodes (1853-1902) was an English boy, and was born at Bishop's Stortford, in Hertfordshire. He was the

grandson of a dairyman, and his father was the vicar of the parish—"Good Mr. Rhodes," the neighbours called him. Cecil was the youngest of five brothers, and his father intended him to be a clergyman, and sent him to the Grammar School at Bishop's Stortford to begin his education. But the boy was delicate, and when he was sixteen his health broke down and the doctor said that he must go to a sunny land to recover.

Rhodes's parents decided to send him out to join his elder brother Ernest, who had emigrated to Natal, on the south-east coast of South Africa, and was growing cotton there. The healthy farm life and the glorious sunshine soon restored Cecil to health and strength; but he did not long remain a farmer, for the year after he arrived thrilling news was brought to the farm. Diamonds had been discovered at Kimberley, nearly four hundred miles inland. The two brothers at once sold their farm and joined the stream of prospectors who were making their way to the diamond diggings.

Good fortune attended the Rhodes brothers at Kimberley and before he was nineteen, Cecil Rhodes, the delicate boy who only a few years before had landed penniless on the sandy shore of Durban in Natal, had become a strong and healthy young man well on the way to become a millionaire.

What was he to do with his money? His first thought was to return to England and finish his education at the university of Oxford, but at length he decided to go on a long camping holiday. On this holiday, which lasted for eight months, he travelled alone save for the native boys who drove his ox wagon. They journeyed slowly, not more than twenty miles a day, passing through the then almost unknown country which is now called Bechuanaland and the Transvaal.

There was plenty of time for thought during the long peaceful days as the traveller walked beside the slow oxen or rode in the creaking, jolting wagon. At night, too, when, rolled in his blankets, he lay by the camp fire and listened to the native boys singing songs in the darkness, he thought of the fine open country he had seen that day, uninhabited save for an occasional village of native huts. He knew that the soil, if properly tilled and sown, would yield splendid crops, and that gold, silver and other precious minerals lay buried in the earth, and he longed to take possession of all this unoccupied land for Britain From this holiday he came back with the determination to give his life to the service of the British Empire and to spreading its dominion in Africa.

For this great work he felt that he needed two things—money and education. "It is of no use having great ideas," said Rhodes, "unless you have money and brains with which to carry them out." Accordingly, he returned to Oxford and took his matriculation examination. Then his health again failed, and he went to see a doctor. "You have only six months to live!" was the verdict. But the doctor was wrong Rhodes returned to Africa, where once more the pure air and sunshine restored him to health, and he set himself again to making money.

Three years later he returned to Oxford to take his degree and studied for some years, going back to Africa once a year to attend to money matters He did not work very hard at Oxford and his tutor one day told him that he was slack in his work. "I shall pass," said Rhodes, "and that is all I want." He had no ambition to be a brilliant scholar, all that he sought was useful knowledge and a clear brain for the service of the British Empire.

Rhodes meant to pass his examination, however, and pass he did His years at Oxford had given him a great love of books, and he always carried a few with him on his travels. One of his best-loved volumes, the *Meditations* of Marcus Aurelius, is still preserved in his house at Cape Town, where it may be seen, marked with a pencil at the passages which Rhodes specially enjoyed reading.

When he returned to Africa for good, Rhodes, who by this time was very rich

indeed, became a most important man. He was elected a member of the Cape assembly, the parliament of British South Africa, and when he was only thirty-seven years old he became its prime minister and the most powerful man in South Africa.

Rhodes had now won the money and the knowledge which he had needed, and he set to work to use them for increasing the power of the British Empire in South Africa. There were two white races in the country, the English and the Dutch Each nation held some land, but there was much territory not yet belonging to either, and Rhodes determined that this unoccupied land should belong to Great Britain. Little by little, by making friends with native chieftains, he won more land, and so gradually his dream began to come true of making "Africa British from the Cape to Cairo" He planned a great railroad, the "Cape-to-Cairo Railway," which should run straight across the continent from north to south, and although this great railway is not complete, the greater part of it has been laid

In spite of all the great work he was doing, however, and the immense wealth he possessed, Rhodes continued to live the simple life of an ordinary man. He had built himself a beautiful house at Groote Schuur, near Cape Town, in which to entertain his guests, and this house still stands and is now the home of every South African prime minister while he is in office. But though Rhodes sometimes lived in this fine house, he much preferred his little thatched cottage near Cape Town. His secretaries always had difficulty with Rhodes over his clothing, for he preferred to wear old flannel trousers and an ancient black hat, and could hardly be prevailed on to change them for more suitable clothes on important occasions

Men who were companions of Rhodes in Africa have told many stories of the kind heart of this millionaire empire builder. One terribly hot summer in Kimberley, the town near the diamond mines, when the one thing people wanted was a cooling iced drink, the ice manufacturers, who were unscrupulous men and saw a chance of making money quickly, put up the price of the ice they made to sixpence a pound. This meant that the poor people, and the hospitals whose patients suffered more than anyone from the heat, could not afford to buy it. As soon as Rhodes heard of this he ordered the men in his own works to make ice and to sell it at a penny a pound. The other ice manufacturers were then bound to bring down their prices, too, and so there were plenty of iced drinks for the thirsty folk of Kimberley.

Rhodes's kindness was shown to everyone, black and white alike. At one time he would be making a rule that no natives should work for more than eight hours a day in his diamond mines—"Eight hours in a mine at a time," he said, "is enough for anyone." At another time, remembering his own early poverty, he would be lending money to young farmers who were not making enough to live on. But he was very shy about these kind deeds, and would let no one know of them except his best friends. "The greatest pleasure of being rich," he said one day to one of them, "is being able to help those who are in trouble." When in camp, he would often get out of his own warm blankets, and prowl, shivering himself, round the camp to see whether everyone, white man and native, had sufficient covering. It was Rhodes's thoughtfulness in little ways like these that made him so much beloved.

Rhodes was not without his faults He was sometimes, especially in later life, too fond of his own way, and treated those who disagreed with him very rudely. But in all his dealings he was honest and just, and would never do a mean or dishonourable thing. "It's not good enough," he would say, and that settled the matter.

The natives with whom he had so much to do felt this honesty in him, and trusted him as they trusted few other white men. It was this trust which saved his life in the

most dangerous and exciting moment through which he ever lived.

In 1896 a tribe named the Matabele, in Rhodesia, rebelled against the British rule. Rhodes was living in Rhodesia at the time, for he loved that beautiful open country, with its low hills and strange piles of rocks. He was particularly fond of a range of hills called the Matoppos, and would often camp there to gaze out on the beautiful view that was to be seen from their summit.

The Matabele, too, had taken refuge in the Matoppo Hills, from whence the British army could not dislodge them. Rhodes decided to try if he could not do by friendliness what the army had failed to achieve by force. It was a dangerous task, for he must both trust the natives and be trusted by them, and to win their confidence and show that he trusted them as well, he must go among them alone and undefended.

Rhodes began by setting up his tent in the Hills, and living quietly there for six weeks. During all that time, an enemy native might have killed him at any moment, for he kept no guard; but the natives, seeing that he trusted them, left him alone. He sent messages to them to say that he had come alone and unarmed to hear their side of the matter.

At last the Matabele decided to hold a great council, or *Indaba*, far away in the hills where no army could reach them. A message was sent to Rhodes inviting him to attend this council. To accept the invitation was to risk his life. But Rhodes never hesitated. He mounted at once, and with three friends, all four unarmed, rode with the messenger to the place of council. There they found the native chiefs assembled, each with his band of warriors in full war paint armed with their clubs, called *knobkerries*, and their stabbing spears, or *assegais*. Straight into this circle of savage tribesmen walked Rhodes and his friends, confident that no harm would come to them.

No harm came. Rhodes listened patiently to the natives' grievances, promised them as much of what they asked as he thought fit, and made them give him certain promises in return. Then he asked the question, "Now for the future. Is it peace or war?" By the answer he would know whether he had failed or succeeded in his mission of peace.

There was a breathless pause. Then one by one the chiefs laid down their sticks to show that they surrendered their arms. "We give you our word," they said. "It is peace." Rhodes and his friends knew that their mission had succeeded. Then Rhodes, bidding farewell to the dusky chieftains, now his friends, rode away. "Ah!" he said to the three brave men who had faced the perilous enterprise with him, "that was one of the moments which make life worth living."

But the life of the great empire builder was drawing to its end. He had long been suffering from a painful disease. In 1899, in spite of his efforts to prevent it, a war, known as the *Boer War*, broke out between the English and the Dutch, and Rhodes, with other English people, was besieged in Kimberley, the "city of diamonds." He was one of the foremost in defending the besieged city, but the hard labour and privations he underwent still further affected his health. At last, in March, 1902, he could carry on his duties no longer. He was taken to his tiny thatched cottage on the seashore at the foot of Table Mountain, and there with a few chosen friends around him he prepared for death. He was not sorry to die, only sad that his work for the British Empire was but half accomplished. "So little done, so much to do!" were almost his last words before this great man went to his rest, March 26, 1902.

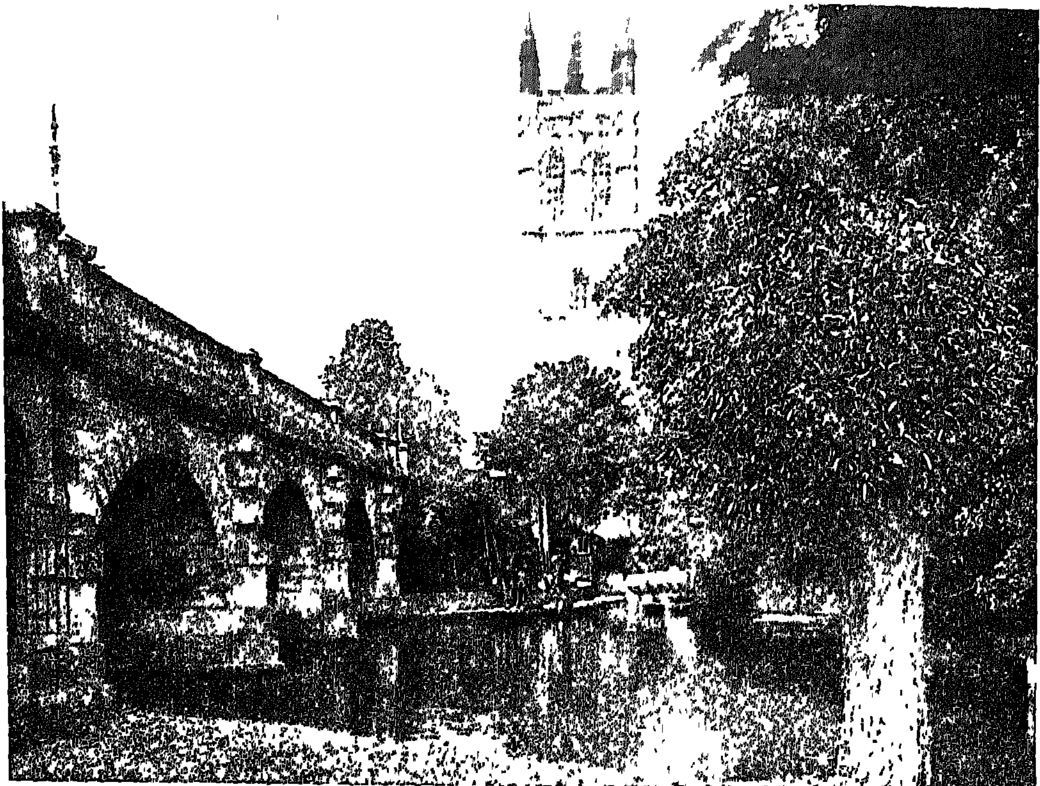
He had done more than he realised. He had suggested to the minds of Englishmen the great idea of "British Africa." He had given them an even greater idea, that of friendship between the English and the Dutch, the two great white races in Africa. He had opened up to the white man much country hitherto unknown, and had founded Rhodesia, the colony which bears his name.

It was in Rhodesia that he was buried, in his beloved Matoppo Hills. "I admire the grandeur and loneliness of the Matoppos, in Rhodesia," he said before he died, "and therefore I desire to be buried in the Matoppos on the hill which I used to visit, and which I call 'The View of the World'" His wish was carried out. Faithful friends carried his coffin up the flat rocks on the slopes of the hillside to its summit, and there, in the shadow of a great boulder, on which lizards play and bask in the hot African sun, sleeps Cecil Rhodes in a simple grave which looks out over the country that bears his name.

The memory of Cecil Rhodes is blessed throughout the world because of his generous will. In this will, remembering his own desire as a youth for "money and brains," he left his millions to be spent on sending young men from all over the world to study at Oxford. Many of these young men, "Rhodes Scholars" as they are called, come over every year from America, South Africa, Australia and Germany, and owe their chance of a university education in England to the amazing generosity and wisdom of Cecil John Rhodes.

Captain Scott, March 29

This is the story of a hero of our own day, Captain Robert Scott, R N, (1868-1912) the English sailor and explorer who reached the South Pole and died on the return journey. Captain Scott had the great gift of a true hero, namely the power of making



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OXFORD. MAGDALEN BRIDGE

others heroic too; for every one of the little band who made with him the terrible journey to the Pole showed a courage and light-heartedness in the face of certain death which stirs our hearts.

Robert Falcon Scott was born in 1868 at Devonport, a seaport and naval station on the south coast of Devonshire. He grew up among ships and sailors, and what could be more natural than that he should choose the sea as a career, thus adding one more to the long list of Devon-born sailor explorers which started with Hawkins, Drake, Gilbert and Raleigh. As soon as he was old enough, that is to say between thirteen and fourteen, Robert Scott entered the navy. He spent two years on board the training ship *Britannia*, was made a lieutenant and later a commander.

For many years men had been trying to find the North and South Poles. In the year when Scott was appointed commander it was decided to send out a special expedition to seek for the South Pole, in the Antarctic Ocean, and Scott was chosen to lead it. The expedition did not reach the Pole, but it discovered many new islands, and explored the great white continent, called Antarctica, which lies round the South Pole, but where no man, not even an Eskimo, can make his home on account of the awful cold

In 1909 the North Pole was discovered by an American named Peary, and in 1910 Captain Scott set out in the *Terra Nova* on another expedition to find the South Pole. The expedition landed at Ross Island and disembarked seventeen Siberian ponies, thirty Siberian dogs, three motor sledges and supplies sufficient to last for three years The Pole was nine hundred miles away from Scott's base, and, to make the journey easier, at every sixty-five miles some of the party were left behind to bury in the snow a week's provisions for Scott and his men to find on their way back; they then returned to the main camp to wait.

On January 3, 1912, the last of these parties, under the charge of Lieutenant Evans, turned back. Only five men were left to go on to the Pole As they stood waving farewell, five distant black figures against a white waste of snow, none of the returning party knew that that was the last time when anyone would see Scott and his four brave comrades alive.

One of the party took a photograph of them all by setting the camera in the snow, joining the group, and then pulling a string to open the shutter and so take the photograph. The negative was found in Captain Scott's tent after his death, and developed, so that we can see to-day a picture of the five brave men who set out on their last journey together. Strange figures they look, muffled in the thick garments, furs, mittens and heavy boots which were needed to keep out the cold, and with grimy, unwashed faces (for washing is impossible on the march). All have grown beards from which hang icicles And yet these five uncouth figures are five heroes whose names will live for ever.

One of them was Dr. Wilson, whom his comrades loved for his courage, his cheeriness and his deep faith in God. They gave him affectionate nicknames, Uncle Bill, Solomon and The Peacemaker—this last because if any of the party quarrelled the doctor was always called in to make peace. Dr. Wilson was the artist of the party, and drew pictures of the scenery and of the birds and beasts which the explorers met. These pictures, which we still have, are beautifully drawn—and they were made by a man whose frozen fingers were numb and sore from pulling all day at a heavy sled!

There was Petty Officer Evans, a giant of a man, whose great strength was invaluable in hauling the sled laden with food There was gallant Captain Oates. There was Lieutenant Bowers, the cheery little fellow who was chosen at the last minute to join the party because Scott feared that four men would not be strong enough to haul the sled. And there was the Captain himself, wise, courageous, ever thoughtful for the welfare of the others and careless of his own.

These five men set out on their search for the Pole, and for a fortnight they travelled through snow and ice till, on January 18, they reached their goal. But a bitter disappointment awaited them. Instead of a bare and silent expanse of snow, unvisited by any human being, they found a little hut which stood on the spot which they knew from their geographical instruments must be the southernmost point of the world

Inside the hut they found a note to say that the Pole had been reached already, barely a month before, by a Norwegian explorer, Captain Roald Amundsen, so that they were not the first to discover it. A letter also lay in the hut addressed to the king of Norway, with a message asking anyone who might find it to deliver it to him. This letter Scott carried away with him, and it was found after his death among his possessions. It was hard to have his hopes frustrated, and Scott wrote in his diary· "The Norwegians have forestalled us at the Pole. It is a terrible disappointment, and I am very sorry for my loyal companions. To-morrow we must march on to the Pole, and then hasten home with all speed we can compass All the day-dreams must go; it will be a wearisome return."

The five men set out on the return journey The hardships they had experienced before were as nothing compared with what they had to face now. Fierce snow blizzards met them, against which it was almost impossible to make their way The sled they had to drag grew heavier and heavier as the frost coated it more and more deeply

To make matters worse, the strong man, Evans, fell ill and had to be put on the sled because he was too weak to walk. His comrades could do nothing for him, and soon he died. This was a terrible loss to the party. There were only four left now to pull the sled, and they could travel but four or five miles a day.

Then Oates's hands and feet were frostbitten, and the pain grew so bad that he could hardly bear it. "What can I do? What *shall* I do?" he said piteously to Dr Wilson, toiling along beside him. "Slog on, just slog on, old man," said Dr Wilson quietly.

The little party knew now that death was certain. They had not enough food, the distance they had to travel was too far and the sled too heavy for their failing strength. Somehow they managed to crawl on till Oates felt that he could go on no longer. He knew that he was dying, and he would not be a burden to the others by having to be trailed on the sled. As he dragged himself wearily and uncomplainingly through the snow, in his mind there was formed a heroic resolve.

One morning in the tent while waiting for a blizzard to die down before they could set out on the day's march (the day happened to be Captain Oates's birthday), he said very quietly, "I am just going outside, and may be some time." His comrades knew what he meant. A fierce gale was blowing outside and no man could live in it. Oates had decided to walk out to his death rather than rob his fellows of their chance of safety. "It was the act of a brave man and an English gentleman," wrote Scott in his diary. "We all hope to meet the end with a similar spirit, and assuredly the end is not far off."

Only three were left now—Scott, Wilson and the marvellous little fellow, Bowers, who laughed and joked and did all he could to keep the others' spirits up. The weary miles dragged by, and at last they were only eleven miles from "One Ton Depot," a spot where a ton of precious provisions had been buried by Captain Evans and his men. But the eleven miles might as well have been eleven hundred, for the three men were utterly spent. A blizzard came on and for the last time they pitched their tent—that tent which was to be their grave.

They had no food and very little oil to burn for warmth, and they knew that the end was near Captain Scott spent his last hours writing up his diary and putting his affairs in order. As he lay in his hut waiting for death, this great-souled hero, thoughtful

to the end for others, wrote down messages of sympathy to all those whose dear ones had died or were about to die in the expedition He wrote letters to his own friends, too. In one of them to his friend Sir James Barrie, the writer who gave us *Peter Pan*, he wrote, "We are pegging out . . feet frozen, no fuel, and a long way from food; but it would do your heart good to be in our tent, to hear our songs." Sad as this story is, we cannot but rejoice at the courage of the men who could sing like that in the very face of death

The blizzard raged for a week, and one by one the starved and frozen prisoners in the little tent passed away. Scott was the last to die. When he felt that his hour had come, he unfastened the top of his sleeping bag, loosened his collar as if to get more air, and passed away with his arm across the dead body of his dear friend Dr. Wilson, March 29, 1912.

Meanwhile the men of the rest of the expedition were waiting as patiently as they could at the main camp. For eight long months terrible storms made it impossible to send out parties in search of the lost leader and his men. At last, in October, the weather cleared, and a party set out on their sad quest

For a fortnight they searched, and at last, on November 12, 1912, they came to the silent tent. In it lay the three still forms, with all around as they had left it The sled stood ready to be loaded, and the skis on which the explorers had travelled stood up on end in the snow ready for use. Sorrowfully the searchers gathered the precious relics, diaries, letters and little personal belongings; then they left the tent with its silent sleepers on the ice No one knows where they lie now, for the ice has moved and carried the tent with it, so that when the spot was visited again it was not to be found

Later, at Hut Point, a cross was erected to the memory of Captain Scott, Dr Wilson, Captain Oates, Lieutenant Bowers and Petty Officer Evans, on which this line from Tennyson's *Ulysses* was carved—than which no man had ever a nobler epitaph·

TO STRIVE, TO SEEK, TO FIND, AND NOT TO YIELD

In one of the notebooks, in a *Message to the Public*, Captain Scott has written:

"Things have come out against us, therefore we have no cause for complaint, but bow to the will of Providence, determined to do our best to the last. . . . Had we lived, I should have had a tale to tell of the hardihood, endurance, and courage of my companions. These rough notes and our dead bodies must tell the tale. . . .

"We are weak Writing is difficult, but for my own sake I do not regret this journey, which has shown that Englishmen can endure hardships, help one another, and meet death with as great fortitude as ever in the past.—R. SCOTT."

When the news reached England, the tragedy struck deep into the hearts of men and women. A memorial service was held in St. Paul's Cathedral which was attended by King George V. Captain Evans, who had managed, after terrible hardships, to reach home once more, told the story of those last days as he had been able to piece it together, and it is a story that all Englishmen are proud to hear though it brings tears to their eyes.

(*Roald Amundsen* (1872–1928), a Norwegian explorer, in 1903–06 led an expedition consisting of himself and six companions through the North-West Passage, and fixed the position of the magnetic North Pole. His next expedition (1910–12) was on board the *Fram*, and he was the first to reach the South Pole. In 1926, on his fourth attempt, he flew in a semi-rigid dirigible with the American Ellsworth, from Spitsbergen to the North Pole, which he circled twice, and finally landed at Teller on the Bering Sea. When General Nobile's airship *Itala* was wrecked on returning from the North Pole, Amundsen volunteered to go in search of him. He left Bergen for Spitsbergen in an aeroplane on June 17, 1928 and was not heard of again.)

Two Notable Songs

The two following songs are suitable for recitation or singing on Empire Day or Remembrance Day.

JERUSALEM

From "Milton"

And did those feet in ancient time
  Walk upon England's mountains green?
And was the holy Lamb of God
  On England's pleasant pastures seen?

And did the Countenance Divine
  Shine forth upon our clouded hills?
And was Jerusalem builded here
  Among these dark Satanic Mills?

Bring me my bow of burning gold!
  Bring me my arrows of desire!
Bring me my spear! O clouds, unfold!
  Bring me my chariot of fire!

I will not cease from mental fight,
  Nor shall my sword sleep in my hand,
Till we have built Jerusalem
  In England's green and pleasant land.

William Blake.

NOTE.—The poem *Jerusalem* is the introduction to *Milton,* written nearly one hundred years ago by the mystical poet William Blake. *Milton* is one of the strange prophetic poems which Blake was always beginning and never finishing. *Jerusalem* is an impressive poem full of lofty thoughts and aspirations. Blake was, of all men, a man of visions They were with him constantly—the breath of his life. He *saw* Christ and the prophets in England; to him imagination was reality. He seems to say in this inspired poem:

Did the Son of God come only to Palestine in the ancient time? Or did He set His seal in the beauty of Nature upon our English country also? But man in these last days is defiling it and destroying its beauty.

I have seen His face shining upon our cloud-topped heights, I have watched Him setting up the Kingdom of God among the works of Satan.

I, too, will fight for that Kingdom; I will take my golden bow, my arrows (the swift messengers of my will), and my spear. I will be a prophet, an Elijah. Send me a chariot of fire, O Lord!

For I will go on fighting, both in my mind, and with my body, until we have built up Thy Kingdom in this green and pleasant land.

At the end of *Jerusalem,* Blake wrote the passage from the Book of Numbers, xi. 29, "Would to God that all the Lord's people were prophets." (*Prophets* here means *teachers* of the word of God.) The poem has been set to music by Sir Hubert Parry.

Chariot of fire—a reference to the account of the prophet Elijah being taken into heaven · "And it came to pass, as they still went on, and talked, that, behold, there appeared a chariot of fire, and horses of fire, and parted them both asunder; and Elijah went up by a whirlwind into heaven" (2 Kings, ii. 11)

There is a short account of Blake's life and some of his simple poems in Vol. III., page 252

RECESSIONAL

God of our fathers, known of old,
  Lord of our far-flung battle-line,
Beneath Whose awful Hand we hold
  Dominion over palm and pine—
Lord God of Hosts, be with us yet,
Lest we forget—lest we forget!

The tumult and the shouting dies;
  The Captains and the Kings depart:
Still stands Thine ancient sacrifice,
  An humble and a contrite heart.
Lord God of Hosts, be with us yet,
Lest we forget—lest we forget!

Far-called, our navies melt away.
  On dune and headland sinks the fire.
Lo, all our pomp of yesterday
  Is one with Nineveh and Tyre!
Judge of the Nations, spare us yet,
Lest we forget—lest we forget!

If, drunk with sight of power, we loose
  Wild tongues that have not Thee in awe,
Such boastings as the Gentiles use,
  Or lesser breeds without the Law—
Lord God of Hosts, be with us yet,
Lest we forget—lest we forget!

For heathen heart that puts her trust
  In reeking tube and iron shard,
All valiant dust that builds on dust,
  And, guarding, calls not Thee to guard,
For frantic boast and foolish word—
Thy mercy on Thy people, Lord!

Rudyard Kipling.

NOTE.—The *Recessional* from *The Five Nations* is one of the best known of all Kipling's poems. On reading it one is impressed by the lofty thought and style, the deep feeling of devotion, and the resonant organlike music. It is essentially a didactic poem; that is, one in which the poet endeavours to teach a lesson or convey a moral. Here the lesson is one for England. England, with its world-wide power having "dominion over palm and pine"; England with its "far-flung battle-line"; England, with its mighty navy, must remember that former great powers—Nineveh and Tyre—have passed away. Nothing is left of them. Tumult and shouting cease, captains and kings, the symbols of pomp and power, all perish. One thing alone remains—"An humble and a contrite heart."

A recessional hymn is a hymn sung during the recession, or withdrawing, of the clergy and choir from the chancel of a church to the robing room, and this poem expresses the poet's sobering thought and counsel to the nation after the outburst of pride and self-glorification at the celebrations attending Queen Victoria's Diamond Jubilee in 1897.

Nineveh—ancient Assyrian city in Mesopotamia ('Iraq), owed its chief renown to Sennacherib (2 Kings, xix), who erected a majestic palace, canalised the city, and laid out a park for wild animals and strange plants.

Tyre—a city of ancient Phoenicia. Its greatness dates from the time of Hiram (tenth century B.C.), the friend of David and Solomon. Tyre established colonies in Sicily, Sardinia, Spain, Africa, and even sent fleets to trade as far as India.

"Such boastings as the Gentiles use"—Compare this line with the boasting of Nebuchadnezzar, king of Babylon, as related in the Book of Daniel, iv. 30, 31, 33:

"The king spake, and said, Is not this great Babylon, that I have built for the house of the kingdom by the might of my power, and for the honour of my majesty?

"While the word was in the king's mouth, there fell a voice from heaven, saying, O king Nebuchadnezzar, to thee it is spoken, The kingdom is departed from thee. . .

"The same hour was the thing fulfilled upon Nebuchadnezzar: and he was driven from men, and did eat grass as oxen, and his body was wet with the dew of heaven, till his hairs were grown like eagles' feathers, and his nails like birds' claws."

"Lesser breeds without the Law"—inferior races outside the Law (the Law given by God through Moses to the Chosen People). There is a touch of arrogance in this line out of keeping with the deep penitence and humility of the rest of the poem. As the ancient Jews considered themselves as a people chosen by God, so the poet thinks of the English as God's chosen people.





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SHAKESPEARE'S BIRTHPLACE

William Shakespeare, April 23

William Shakespeare (1564-1616) was the great poet, dramatist and actor of the Elizabethan era. The facts concerning his life are few, and many of them have been doubted He was born in 1564 at Stratford-on-Avon, in Warwickshire, in the heart of rural England, where woods, orchards, meadows, and the pleasant river Avon must have made him fond of country scenes, for in at least one play, *As You Like It*, much of the action takes place in a forest. He went to the Grammar School, where he probably learned Latin and some Greek, and other subjects taught at such schools,—English, a little geography, and mathematics. During his school period the strolling players visited Stratford, and in all probability their plays kindled the imagination of Shakespeare and sowed the seeds of a future great harvest—his own dramas. When at thirteen he left school to help his father in his calling,—variously given as that of butcher, glove-maker, and farmer, though it is certain that he was an alderman

and much respected in the town, Shakespeare may have given himself time for further study, particularly of the law. But this is by no means certain. We know that in his plays are many law terms, but then his father, John Shakespeare, had to appear in the law courts so many times for debt, that a quick-witted son could have remembered many legal words and have used them later.

In 1582 Shakespeare married Agnes, or Anne, Hathaway of Shottery, a neighbouring village. In those days Agnes and Anne were alternative spellings of the same name The cottage, now shown as *Anne Hathaway's Cottage*, is a snug, thatched farmhouse in a delightful garden, planted with the flowers mentioned in the dramatist's works, with paved paths and a small wooden gate. It is about half an hour's walk from Shakespeare's own house in Stratford.

Soon after his marriage a child, Susanna, was born, and in 1585 twins, Hamnet, a son, and Judith, a daughter, were born to him.

Then came an event which caused Shakespeare to go to London. He was accused of poaching in the grounds of Sir Thomas Lucy of Charlcote, near Stratford. By way of revenge he "made a ballad upon him," so bitter that he was forced to leave his home. He was fined, and probably imprisoned, and for this treatment the dramatist later took ample revenge, for, in *The Merry Wives of Windsor*, Lucy figures as Justice Shallow, an absurd and



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ANNE HATHAWAY'S COTTAGE

talkative Justice of the Peace. The family coat of arms of the Lucy family was three "luces" or pikes,—a kind of fish. Shakespeare, then famous in London, could not resist the temptation to speak of Justice Shallow's "old coat" as having a "dozen white luces" on it, in which "luce" means a louse or flea! Most people, of course, would see the reference.

In 1586, therefore, we find the future dramatist in London. The stories told of him that he was first occupied in holding gentlemen's horses, then as clerk or writer to a lawyer, and afterwards as a printer's assistant, may be true. We cannot say. By 1592 he became acquainted with the companies of actors, turned actor himself, and helped to rewrite plays and make them more interesting. By that time, too, he was an honoured member of the *Lord Chamberlain's Company of Actors*, which later, in James I.'s reign, became known as the *King's Company*, or *His Majesty's Players*. In this company he became a firm friend of Richard Burbage, John Heminges, Henry Condell and Augustine Phillips He probably gained his first stage experience on the boards of *The Theatre* stage, which theatre James Burbage, Richard's father, had built outside the city wall. Plays had to be given outside the city for fear of plague, and it was this command that had led the actor to erect *The Theatre* in 1576 Then came the building of other theatres.

Shakespeare's dramatic writing was probably all confined to the period from 1591 to 1611, and during this period he wrote many plays, besides revising and rewriting others. For his histories, comedies and tragedies he borrowed stories from old plays and from books of Italian stories which had been translated into English. His plays show his remarkable gifts of observation, the power to make living characters, and the genius for writing wonderful poetry To this period of writing belong plays produced at the rate of two a year, besides long poems and sonnets.

The dramatist may have played before Queen Elizabeth and King James I, for Ben Jonson, a fellow dramatist, speaks of the "sweet swan of Avon," and

" Those flights upon the banks of Thames
That so did take Eliza and our James."

Shakespeare's popularity grew apace, and his early plays, *A Midsummer Night's Dream*, *Henry IV.* and *Henry V.*, won round upon round of applause He and other dramatists met for conversation and amusement at the *Mermaid Tavern* in Bread Street, Cheapside. Here he met "rare Ben Jonson," a clever and very "book-learned" man A later play and poem writer says —

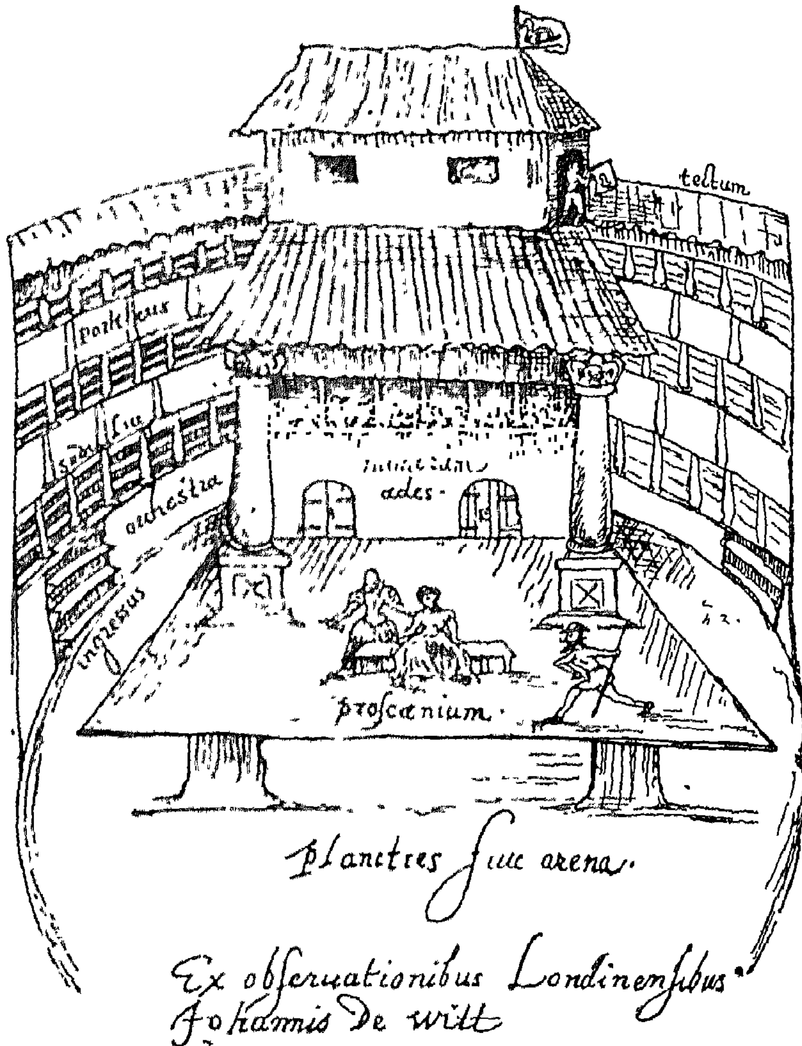
" What things have we seen
Done at the Mermaid? heard words that have been
So nimble and so full of subtle flame,
As if that every one from whom they came
Had meant to put his whole wit in a jest. . . ."

Francis Beaumont

In 1596 Shakespeare returned to his native town, and in the following year bought, for £60, a country house in Stratford —*New Place*. Here he planted a mulberry tree, which, when cut down in a later age, was treated with much reverence, and relics were made from the wood.

From 1599 he had a share in the *Globe* theatre and thus as actor, dramatist, and part owner of a theatre, and as farm owner, his income must have been fairly good. He had later a share in the profits of another theatre, the *Blackfriars*. By the end of his dramatic career he was a wealthy and respected citizen of his native town, Stratford.

In 1599 he was again actively writing plays, this time comedies; and three perfect plays came from his pen, *Much Ado about Nothing*, *As You Like It*, and *Twelfth Night*. A year later saw the production of *Julius Caesar*.



THE SWAN THEATRE, LONDON, 1596

With the death of Queen Elizabeth in 1603 and the crowning of James I., the prosperity of Shakespeare and his fellow-actors and writers increased. Many times were his own plays and others acted before the new sovereign, at Wilton, to which place the court had gone while the plague raged in London, at Hampton Court at Christmas time, and during the celebrations of James's progress through London in 1604.

Time after time his plays were acted at court. Such encouragement was not without its effect. Shakespeare redoubled his activity, and at this time were produced his greatest plays, *Othello* in 1604, a tragedy; *Macbeth* in 1605-6, a tragedy; *King Lear*, greatest of his tragedies, but not so actable as his others, in 1606, *Antony and Cleopatra*, an historical play dealing with the story of the love of the Egyptian queen for the

Roman, Antony, and their deaths, written in 1608; *Coriolanus*, another historical play of Roman times, 1609, all these are tragedies with scarcely a smile in them anywhere Tragedy was exceedingly popular with the Elizabethans. At the opening of the festivities of Christmas, 1606, surely a *joyous* period, the play chosen for performance before the king was *King Lear*, the most profound and terrible of Shakespeare's tragedies! *King Lear* is the story of a weak and old king whose two elder daughters think him a terrible nuisance and bore, they torture him, not bodily but mentally, by refusing to love and honour him, and by preventing him from keeping his own servants. He has resigned his crown, and divided the kingdom between his two daughters with whom he hopes to live alternately. His youngest daughter, Cordelia, who cannot *speak* her great love and reverence for her father, and who therefore has been banished, watches this heartless cruelty on the part of her two sisters, and returns to help her father, but too late. Shut out from the castles of his daughters, on a wild and stormy night, homeless, shelterless, dreading all the time that he will go mad, Lear loses his reason. His wits are restored in time for him to recognise his daughter Cordelia, and realise her great love for him. But it is then too late. Cordelia is dead, and Lear, too, dies in agonies of mental torture over his own blind stupidity in trusting *two stones, two serpents*, and in casting away a heart of gold—Cordelia. The horror of the mad Lear, and of a man who has been banished by him and who pretends madness, is too terrible to be acted on the stage. and *Lear* remains one of the great reading plays of the world. And yet this appalling tragedy was chosen for a Christmas play! This shows what interest was felt in tragedy in those times. *Cymbeline*, *The Winter's Tale*, and *The Tempest* all belong to the end of Shakespeare's writing and acting period.

Hereafter Shakespeare lived in retirement, though, according to some people, he may have given ideas for plays, and written them out roughly, for such dramatists as Beaumont and Fletcher to finish. He may have helped in *Henry VIII.*, produced at the *Globe* in 1613. It is not so good as Shakespeare's own historical plays, but introduced a good deal of scenery, stately courtiers in full court dress and great pomp. Even matting for the stage was used in this play. The stage was not as a rule carpeted or covered in any way, the bare, wooden boards were trodden by the actors' feet, so that matting to cover them was a great luxury The parts of the play which concern Queen Katharine and her trial are probably Shakespeare's; the rest is not.

On June 29, 1613, the *Globe* was burned, during a performance of the play, *Henry VIII*, in which Henry is received by Anne Boleyn, to the accompaniment of the thundering of cannon "Some of the paper or other stuff where-with one of them (cannon) was stopped did light on the thatch, where being thought at first but an idle smoak, and their eyes more attentive to the show, it kindled inwardly, and ran round like a train, consuming within less than an hour the whole House to the very ground This was the fatal period of that vertuous fabrique; wherein yet nothing did perish, but wood and straw, and a few forsaken cloaks; only one man had his breeches set on fire, that would perhaps have broyled him, if he had not by the benefit of a provident wit put it out with bottle(d) ale." (From Sir Henry Wotton.)

No one was hurt, but much stage property and probably the written copies of Shakespeare's plays perished. The theatre was rebuilt the next year, and re-opened on June 30, 1614, "the fairest that ever was in England" But Shakespeare had grown weary and his active life was closing.

In 1611 he had retired to Stratford, to *New Place*, but he kept up his friendship with the London players, and his plays were more represented than those of other dramatists. At the marriage of the charming Princess Elizabeth to the elector Palatine,

seven of Shakespeare's plays were acted. Shakespeare now began to forsake plays and theatres, and perhaps was influenced by the strict religious sect of Puritans. Yet to the close of his life he remained intimate with Ben Jonson.

The Puritans thought plays were wicked, and it seems curious that the dramatist should have considered these strict people worth entertaining at his house. On March 25, 1616, Shakespeare signed his will in the presence of five neighbours as witnesses. A few weeks later he died on his birthday, April 23.

He was buried before the altar in Stratford church, and, to prevent the desecration of his bones (for the graves of many others had been disturbed) he caused the following lines to be engraved on his tomb:

"Good friend, for Jesus' sake forbear
To dig the dust enclosed here;
Blest be the man that spares these stones,
And curst be he that moves my bones."

His wife and daughters lie beside him, his own grave not being touched even to receive their bodies.

His will is a curious document, many people sharing his goods and money. Much went to his elder daughter, a wise and careful person, who probably looked after her mother during her lifetime. To his wife Shakespeare left apparently little, but she was by no means a capable manager of an estate and money, and so the husband probably thought of Susanna as a more prudent person, and to her care he entrusted his wife. Many people received sums of money, articles of silver, pieces of furniture. His actor friends received money to buy mourning rings.

By 1623 a monument had been placed in the church at Stratford. Many were the tributes paid to him in writing. He is mentioned with honour by other dramatists, and poets, and prose writers. Ben Jonson thought he should have been buried in Westminster Abbey, and wrote of him

"Thou art a monument without a tomb,
And art alive still while thy book doth live,
And we have wits to read and praise to give."

"Rare Ben" himself lies in the Abbey close to Chaucer, Spenser, Beaumont and Michael Drayton.

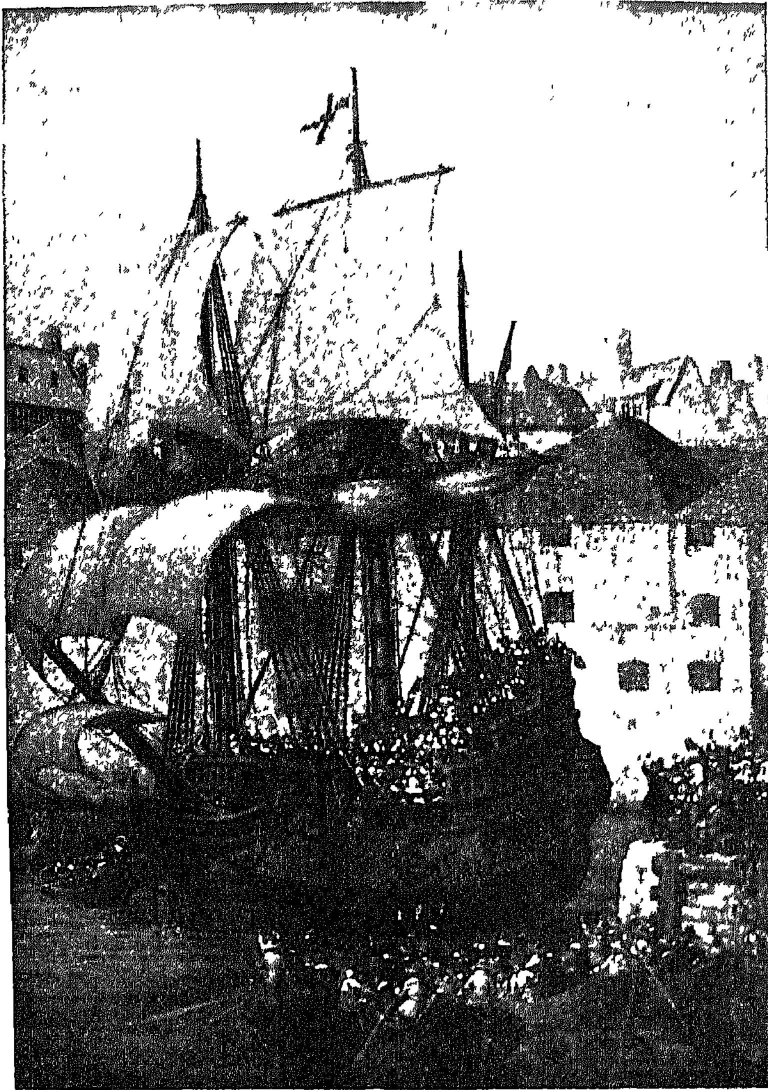
Jonson later wrote of his friend, "I loved the man and do honour his memory, on this side idolatry, as much as any. He was, indeed, honest, and of an open and free nature." Again we hear him spoken of as "friendly," and "honest"; never do we find the least dispraise of him as a man.

In 1926 the theatre at Stratford was burned down. Then a new *Shakespeare Memorial Theatre* was built by public subscriptions from all over the world. On St. George's Day, April 23, 1932, the *Memorial Theatre* was opened by H.R.H. the Prince of Wales, who received from Miss Elizabeth Scott, the architect, a golden key with which he unlocked the doors. Ambassadors, ministers, and many other famous people were present at the opening.

The Departure of the "Mayflower", Sept. 6

The *Mayflower* was the vessel which carried from Southampton, England, to Plymouth, Mass., the Pilgrim Fathers who established the first permanent colony in New England. It was a tiny vessel which in company with the *Speedwell* sailed from Southampton on August 5, 1620, the two having on board a hundred and twenty Pilgrims. The *Speedwell* was found to be unseaworthy, and on September 6 the *Mayflower* sailed alone from Plymouth with a hundred (or a hundred and two) passengers. The following is an account of the voyage across the Atlantic:

"These troubles being blown over, and now all being compact together in one ship, they put to sea again with a prosperous wind, which continued diverse days together, which was some encouragement unto them: yet according to the usual manner, many were afflicted with sea sickness.



From the painting by Gustave Alaux] [*General Photographic Agency*

DEPARTURE OF THE "MAYFLOWER" FROM PLYMOUTH

"After they had enjoyed fair winds and weather for a season, they were encountered many times with cross winds, and met with many fierce storms, with which the ship was shrewdly shaken and her upper parts made very leaky. And one of the main beams in the midships was bowed and cracked, which put them in some fear that the ship could not be able to perform the voyage. So some of the chief of the company, perceiving the mariners to fear the sufficiency of the ship, as appeared by their mutterings, entered into serious consultation with the master and other officers of the ship, to

consider in time of the danger, and rather to return than to cast themselves into a desperate and inevitable peril. And truly there was great distraction and difference of opinion among the mariners themselves; fain would they do what could be done for their wages' sake (being now half the seas over,) and on the other hand they were loath to hazard their lives too desperately. But in examining of all opinions, the master and others affirmed they knew the ship to be strong and firm under water, and for the buckling of the main beam, there was a great iron screw the passengers brought out of Holland, which would raise the beam into his place; the which being done, the carpenter and master affirmed that with a post put under it, set firm in the lower deck, and otherways bound, he would make it sufficient. And as for the decks and upper works, they would caulk them as well as they could, and though with the working of the ship they would not long keep staunch, yet there would otherwise be no great danger, if they did not overpress her with sails. So they committed themselves to the will of God and resolved to proceed. In sundry of these storms the winds were so fierce and the seas so high as they could not bear a knot of sail, but were forced to drift for diverse days together. And in one of them as they thus lay at drift in a mighty storm, a lusty young man (called John Howland,) coming upon some occasion above the gratings, was, with a roll of the ship, thrown into the sea, but it pleased God that he caught hold of the topsail halyards, which hung overboard and ran out at length; yet he held his hold (though he was sundry fathoms under water) till he was hauled up by the same rope to the brim of the water, and then with a boat-hook and other means got into the ship again, and his life saved; and though he was something ill with it, yet he lived many years after; and became a profitable member both in church and commonwealth. In all this voyage there died but one of the passengers, which was William Butten, a youth, servant to Samuel Fuller, when they drew near the coast But to omit other things (that I may be brief,) after long beating at sea they fell in with that land which is called Cape Cod, the which being made and certainly known to be it, they were not a little joyful. After some deliberation had among themselves and with the master of the ship, they tacked about and resolved to stand for the southward (the wind and weather being fair) to find some place about Hudson's river for their habitation But after they had sailed that course about half a day, they fell among dangerous shoals and roaring breakers, and they were so far entangled therewith as they conceived themselves in great danger and the wind shrinking upon them withal, they resolved to bear up again for the Cape, and thought themselves happy to get out of those dangers before night overtook them, as by God's providence they did. And the next day they got into the Cape Harbour, where they rode in safety.

"Being thus arrived in a good harbour and brought safe to land, they fell upon their knees and blessed the God of heaven, who had brought them over the vast and furious ocean, and delivered them from all the perils and miseries thereof, again to set their feet on the firm and stable earth, their proper element."

The Pilgrims had left England because they had separated from the English Church and desired to found new homes across the sea where they could carry out their religious services as they pleased In 1920, three hundred years after their landing in America, Plymouth Rock, a granite boulder on which the Pilgrims stepped from the *Mayflower*, was placed on the spot where it had originally stood. Behind the Rock rises Cole's Hill, where during the terrible first winter in America the Pilgrims buried half their number. To prevent the hostile Indians from knowing how great were their losses they levelled the graves of the departed and sowed them with grain. In spite of much suffering and hardship the remainder

of the little band held on bravely to form the beginnings of what in the end became a flourishing colony.

Oak-Apple Day, May 29

Most country children in England and many town children, too, wear a sprig of oak on May 29, and if the sprig they wear has one of those curious "apples" or galls on it they are indeed proud. The first Oak-Apple Day was a very joyous one for England. It was the day on which Charles II. returned from exile to be crowned king of England Charles as a prince had had an adventurous life His father, Charles I, was a misguided and unfortunate king. There was much disagreement between him and his parliament as to how the country should be governed. Charles believed in the "Divine Right of Kings." He affirmed that he had been chosen by God to rule the land, that he was answerable only to God for all that he did, and that he could rule exactly as he thought right and proper. On the other hand about one half of the people in England considered that the members they had selected to represent them in parliament should have a large share in the government of the country. In the end there seemed nothing to do but to go to war and fight the matter out. The king's friends, or Royalists, were called Cavaliers, and the parliamentarians were known as Roundheads, because they wore their hair cropped short, while the Cavaliers had long, flowing locks. The Civil War



By permission of the artist] [*From the picture by C. M. Padday*

THE RETURN OF CHARLES II

lasted from August, 1642, to September, 1646 Many battles were fought, and in the end the king's party was defeated. The parliamentarians had a notable leader of their army in Oliver Cromwell; he trained a body of famous soldiers known as Ironsides who carried all before them. King Charles was brought for trial in Westminster Hall on the charge of being the cause of the Civil War. He was condemned to death and on January 30, 1649, he was beheaded outside Whitehall, one of his London palaces

1651 A reward of £1,000 was offered for the capture of the prince, but none of his friends betrayed him. On September 6, 1651, he lay in the top of an oak tree in a wood in Shropshire and watched the soldiers of Cromwell looking for him below. After many adventures he escaped to Holland

For about nine years Oliver Cromwell and his army strictly governed the country, but the rule of the army was not pleasing to the greater part of the people, and when, in September, 1658, Cromwell died, a parliament was called which invited Prince



From the painting by Sir John Gilbert R A] [*By permission of the Mappin Art Gallery, Sheffield*

CHARLES I LEAVING WESTMINSTER HALL

Prince Charles, who had been living in France with his mother Henrietta Maria, was proclaimed king in Scotland and parts of Ireland. In 1651 he landed in Scotland and was crowned king of the Scots at Scone. Cromwell and his Ironsides advanced with an army into Scotland and heavily defeated the Scots at the battle of Dunbar, September 3, 1650 Exactly a year later, when Prince Charles with a large army entered England, Cromwell followed from Scotland and utterly routed the army at Worcester, September 3,

Charles to return to England and become its king. On May 29, 1660, the prince returned from his wanderings and became King Charles II , and Oak-Apple Day has been celebrated by boys and girls from that time. Here is an account of the rejoicings which took place in London on the first Oak-Apple Day.

"Upon the 29th of May, which was his Majesty's birthday, and now the day of his restoration and triumph, he entered London, the highway from Rochester to Blackheath

being on both sides so full of acclamations of joy, and crowded with such a multitude of people that it seemed one continued street wonderfully inhabited. Upon Blackheath the army was drawn up, consisting of above fifty thousand men, horse and foot, in excellent order and equipage, where the general presented the chief officers to kiss the king's hands, which grace they seemed to receive with all humility and cheerfulness. Shortly after, the lord mayor of London, the sheriffs, and body of the aldermen, with the whole militia of the city, appeared with great lustre; whom the king received with a most graceful and obliging countenance, and knighted the mayor and all the aldermen, and sheriffs, and the principal officers of the militia· an honour the city had been without near eighteen years, and therefore abundantly welcome to the husbands and their wives. With this equipage the king was attended through the city of London, where the streets were railed in on both sides that the livery of the companies of the city might appear with the more order and decency, till he came to Whitehall; the windows all the way being full of ladies and persons of quality, who were impatient to fill their eyes with a beloved spectacle of which they had been so long deprived The king was no sooner at Whitehall, but (as hath been said) the speakers, and both Houses of Parliament, presented themselves with all possible professions of duty and obedience at his royal feet, and were even ravished with the cheerful reception they had from him. The joy was universal; and whosoever was not pleased at heart, took the more care to appear as if he was, and no voice was heard but of the highest congratulation, of extolling the person of the king, admiring his condescensions and affability, raising his praises to heaven, and cursing and detesting the memory of those villains who had so long excluded so meritorious a prince, and thereby withheld that happiness from them, which they should enjoy in the largest measure they could desire or wish."

The Great Plague and the Great Fire

During the reign of Charles II., who is remembered by boys and girls on Oak-Apple Day, a terrible plague swept over London.

Nowhere in England was any attention paid to sanitary measures, there were no drains, dirt and filth lay in the streets, not even the water supply was kept pure, and the people were much more dirty in their habits than they are to-day, for our ancestors did not wash themselves often, and baths were almost unknown. Of course disease was very common, and large numbers of the people, especially the poor, died every year from plague. You remember that in 1349 a terrible pestilence called the Black Death swept over England, in which about one-half of the people died. For the next three hundred years the country was never free from plague. In London, up to the end of the Tudor times, the plague was nearly continuous, but in the Stuart days there were only three great outbreaks; one at the accession of James I., when thirty thousand people died in London; another, no less deadly, when Charles I. came to the throne, and the last great attack in 1665, which lasted from June to December.

June, 1665, was a very hot month, and the following autumn and winter were especially dry, and this helped the plague to spread from the narrow alleys and filthy courts where it was always present. In June several houses in Drury Lane were seen to be marked with the sign of the plague—a large red cross with the words "Lord have mercy upon us" Gradually the plague grew worse and worse, till in September one thousand five hundred people died in one day and twenty-four thousand in three weeks The king and his court and the rich folk fled to the country for safety, and the streets were crowded with carts and wagons carrying women and children and goods.

At night the dead-cart, with its muffled bell, passed along the streets, and the cry of "Bring out your dead" was heard outside almost every house All trade was at a

standstill, and grass grew in the silent and deserted streets. With cold weather, the plague gradually grew less, and slowly died out, but not before one hundred thousand people had perished

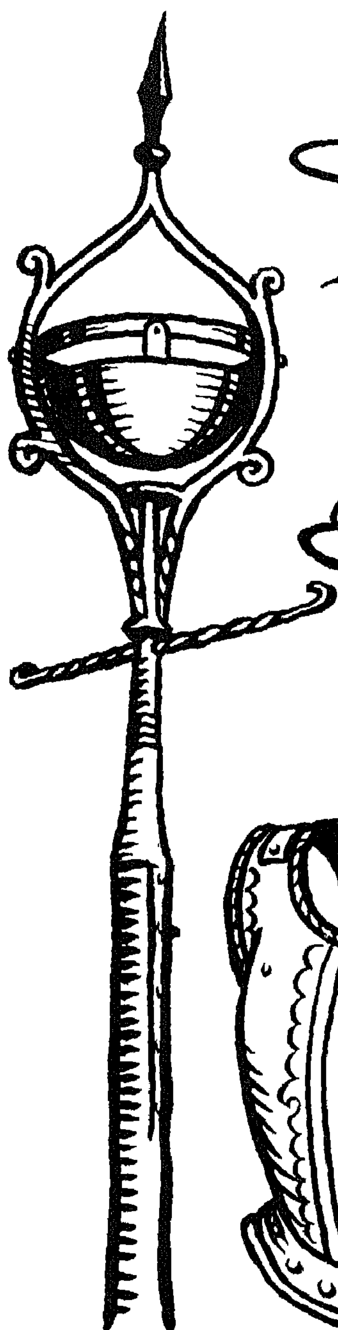
Next year another terrible misfortune befell London. On September 2, 1666, a fire broke out in Pudding Lane, near London Bridge. The Great Fire raged for five days, and destroyed the whole city, from the Tower to the Temple and from the Thames to Smithfield. Four hundred streets, eighty-nine churches, and nearly all the public buildings of London were destroyed The fire could only be stopped by blowing up the houses and making great gaps which the flames could not cross. Among other buildings St. Paul's cathedral was burnt down. The famous architect, Christopher Wren, was living at this time, and the new London was built on a better plan, but of course the slums outside the city walls on the east still remained A tall column, "The Monument," was set up to show where the fire began.

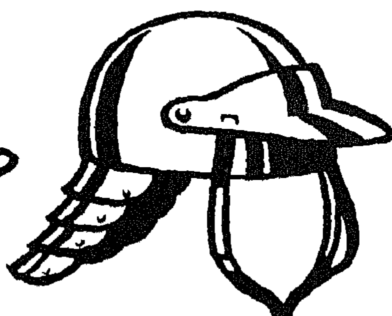
Here are some extracts from a *Diary* which was written by a gentleman named Samuel Pepys[1] who lived in London during the Great Plague and the Great Fire

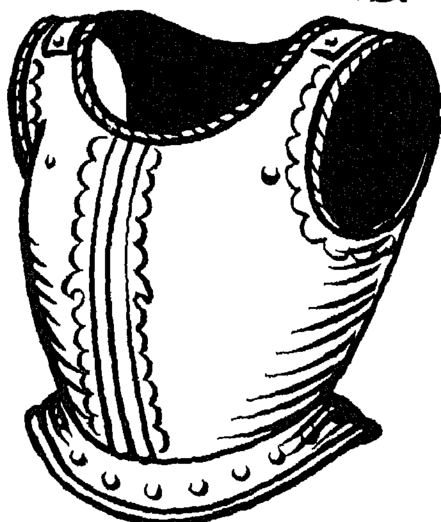
September 2, 1666.—Some of our mayds sitting up late last night to get things ready against our feast to-day, Jane called us up about three in the morning, to tell us of a great fire they saw in the City. So I rose and slipped on my night-gowne, and went to her window, and thought it to be on the backside of Marke-lane at the farthest; but, being unused to such fires as followed, I thought it to be far enough off, and so went to bed again and to sleep. About seven rose again to dress myself, and there looked out at the window, and saw the fire not so much as it was and further off So to my closett to set things to rights after yesterday's cleaning. By and by Jane comes and tells me that she hears that above 300 houses have been burned down to-night by the fire we saw, and that it is now burning down all Fish-street by London Bridge So I made myself ready presently, and walked to the Tower . . . , and there I did see the houses at that end of the bridge all on fire, and an infinite great fire on this and the other side the end of the bridge; which, among other people, did trouble me for poor little Michell and our Sarah on the bridge So down, with my heart full of trouble, to the Lieutenant of the Tower, who tells me it begun this morning in the king's baker's house in Pudding Lane, and that it hath burned St Magnus's Church and most part of Fish-street already So I down to the water-side, and there got a boat and through bridge, and there saw a lamentable fire Poor Michell's house, as far as the Old Swan, already burned that way, and the fire running further, that in a very little time it got as far as the Steeleyard, while I was there. Everybody endeavouring to remove their goods, and flinging into the river or bringing them into lighters that lay off; poor people staying in their houses as long as till the very fire touched them, and then running into boats, or clambering from one pair of stairs by the water-side to another. And among other things, the poor pigeons, I perceive, were loth to leave their houses, but hovered about the windows and balconys till they burned their wings, and fell down. . . . So near the fire as we could for smoke, and all over the Thames, with one's face in the wind, you were almost burned with a shower of fire drops. This is very true; so as houses were burned by these drops and flakes of fire, three or four, nay, five or six houses, one from another. When we could endure no more upon the water, we to a little ale-house on the Bankside, over against the Three Cranes, and there staid till it was dark almost, and saw the fire grow, and, as it grew darker, appeared more and more, and in corners and upon steeples, and between churches and houses, as far as we could see up the hill of the City, in a most horrid malicious lurid flame, not like the fine flame of an ordinary fire. . . . We staid till, it

[1] Pronounced "Peeps."

SKETCHES FOR THE BLACKBOARD





A Cresset—A Street Lamp which was Filled with Combustible Material

Roundhead

Cavalier

Breast and Back Plates as worn by Soldiers of the Period

Headpiece with Lobster-Tail Covering for the Neck

A Puritan Woman

being darkish, we saw the fire as only one entire arch of fire from this to the other side the bridge, and in a bow up the hill for an arch of above a mile long: it made me weep to see it. The churches, houses, and all on fire and flaming at once, and a horrid noise the flames made, and the cracking of houses at their ruine. So home with a sad heart, and there find every body discoursing and lamenting the fire, and poor Tom Hater come with some few of his goods saved out of his house, which is burned upon Fish Street Hill I invited him to lie at my house, and did receive his goods, but was deceived in his lying there; so as we were forced to begin to pack up our owne goods, and prepare for their removal; and did by moonshine (it being brave dry, and moonshine, and warm weather) carry much of my goods into the garden, and Mr Hater and I did remove my money and iron chests into my cellar, as thinking that the safest place And got ready my bags of gold into my office, ready to carry away, and my chief papers of accounts also there, and my tallys into a box by themselves. So great was our fear, as Sir W. Batten hath carts come out of the country to fetch away his goods this night. We did put Mr. Hater, poor man, to bed a little; but he got but very little rest, so much noise being in my house, taking down of goods.

September 4.— . Now begins the practice of blowing up of houses in Tower Street, those next the Tower, which at first did frighten people more than anything, but it stopped the fire where it was done, it bringing down the houses to the ground in the same places they stood, and then it was easy to quench what little fire was in it, though it kindled nothing almost.

September 7.—Up by five o'clock; and, blessed be God! find all well; and by water to Paul's wharfe. Walked thence, and saw all the towne burned, and a miserable sight of Paul's Church, with all the roofs fallen, and the body of the quire fallen into St. Fayth's, Paul's school also, Ludgate, and Fleet Street, my father's house, and the church, and a good part of the Temple

Robert Clive, November 22

Robert Clive (1725-1774) was the statesman and general who founded the empire of British India. He was born in the parish of *Moreton Say, Shropshire*, and belonged to one of the oldest and best known families in the county. As a schoolboy he was the despair of his teachers, for he neglected his books, and was sent from school to school. At the age of eighteen, he went out to Madras as a writer in the civil service of the East India Company For two years he spent his leisure hours in studying hard, and so made up for his past carelessness at school. In India at this time, the English and the French were rivals, for both nations had factories or trading stations there

At the age of twenty-one, Clive took part as a volunteer in the fighting with the French, which terminated with the peace of Aix-la-Chapelle, 1748. The three principal native states in India were the Deccan, Bengal and Oudh. There were rival claimants for the position of viceroy of the Deccan, and for that of nawab of the Carnatic, the chief subordinate States under the Deccan. Dupleix, the French leader, took the part of the pretenders in both places, and was carrying all before him. The British had taken up the cause of the more legitimate claimant in the Carnatic, and Clive was put in command of the troops He led a small force against Arcot, the capital, and drew off the enemy who was besieging Trichinopoly. Clive was closely besieged in Arcot, and there is no parallel to his masterly defence of the citadel in 1751 till the siege of Lucknow in 1857

The siege of Arcot at once gave Clive a European reputation. Pitt pronounced the young man of twenty-seven, who had done such gallant deeds, a "heaven-born general." Early in 1753 Clive went home to England, where he was greatly praised by the directors of the East India Company who presented him with a sword having the hilt set with diamonds Two years later Clive set out again for India, this time to be governor of

Fort St. David. But shortly after reaching India, and before he could take up his appointment, news was received that the prince of Bengal, Surajah Dowlah, had captured and plundered the trading station at Calcutta.

To revenge this outrage, Clive was sent from Madras with three ships. He disembarked his troops some miles below Calcutta, and marched through jungles to the attack; he defeated the whole army of the nawab, who then hastened to conclude a treaty, under which favourable terms were conceded to the East India Company In the agreement, Clive appears under the name by which he was known to the natives of India, Sabut Jung, or "the daring in war."

The rule of Surajah Dowlah became as intolerable to his own people as to the British While he intrigued with the French, a native conspiracy was afoot against him. The conspirators agreed with Clive for British assistance in dethroning him, and placing Jafar Ali on the throne

The hot season of 1757 was spent in negotiations, and in the middle of June, at the beginning of the monsoon rains, Clive began his march against Murshidabad, a vast place, the capital of the Mogul viceroys of Bengal. The British troops went in boats, and the sepoys marched along the right bank of the Hugli. On June 21, Clive arrived opposite Plassey, then an extensive grove of mango trees, and on June 23 won an overwhelming victory Surajah Dowlah fled from the field on a camel, and came to an untimely end. Clive entered Murshidabad and established Jafar Ali on the throne. An enormous treasure of gold, silver and jewels was shown to Clive, and he was besought to ask what he would, but he was content with £160,000, while half a million was distributed among the army and navy.

For all practical purposes Clive was master of Bengal, and in 1760, broken in health by four years' incessant labour, he returned to England where he was received with the greatest enthusiasm. He was made Baron Clive of Plassey, and was elected member of parliament for Shrewsbury

Fresh trouble, however, arose in India. The administration of the new province by the East India Company was corrupt and inefficient, and Lord Clive was hurried out to Bengal with the double power of governor and commander-in-chief In less than two years he had put down corruption. From the emperor he secured a most important document—Bengal, Behar and Orissa were ceded to the Company, 1765 By this deed the East India Company became the rulers of thirty millions of people.

Having thus founded the empire of British India, Clive sought to reform the civil and military administrations, and finally returned to England. After refusing many rich gifts, and after giving generously to others, he was fiercely attacked in parliament and in the press and accused of working to enrich himself Then this great man, who had done more for his country than any other soldier until Wellington, and more for the princes and peoples of India than any statesman in history, died by his own hand, November 22, 1774, in his fiftieth year.

James Wolfe, September 13

James Wolfe (1727-1759), was born at Westerham, in Kent, and was educated at Greenwich. Though his health was not good, Wolfe had made up his mind, while still quite a boy, that he would be a soldier. In 1742, when he was only fifteen, he was sent to Flanders, and until the end of the war of the Austrian Succession, he was continuously on active service, and was present at the battles of Dettingen, Falkirk, Culloden (where he served against Prince Charles Edward), and at Laffeldt. Wolfe rose quickly in rank, for his zeal, intelligence, and gallantry were remarkable. As lieutenant colonel of the 20th Foot he was stationed for about eight years at different places in Scotland and England.

Wolfe accompanied the expedition to Rochefort in 1757 as quartermaster-general This expedition was an utter failure; but

it was believed in England that if Wolfe had been able to carry out his own ideas for landing as he wished the enterprise would have succeeded.

In 1758, Wolfe was appointed to command a brigade in America, where, at the siege of Louisbourg he once more brilliantly distinguished himself. There was rivalry between France and England in America; France had colonised the valley of the St. Lawrence to the north of the New England British colonies, and a restless warfare had begun between the French and English rival races. Reinforcements had been sent from Europe to help the French, and the English were supported by the great English statesman, William Pitt, afterwards Lord Chatham. Pitt, who fully appreciated the genius of Wolfe as a commander, specially chose him to lead a concentrated attack on the French headquarters at Quebec, and Wolfe was to have full freedom to carry out the operations as he thought best. In 1759, Wolfe left England with about nine thousand troops; and it was in this year that the struggle between France and England for the mastery in North America was decided, after long and tedious preparations. By the marvellous seamanship of the English admiral, Wolfe and his troops arrived without mishap before Quebec at the end of June, 1759. The British seized the heights on the south shore of the St Lawrence, opposite Quebec; but the French commander, Montcalm, had entrenched nearly all his men, and remained inactive. Wolfe was puzzled by this inaction of the French, and after some unsuccessful attacks on the French lines, he resolved to take a force downstream, and land the men secretly at a cove only about one and a half miles from Quebec This plan Wolfe carried out successfully. It was a dark night when the English soldiers rowed with muffled oars to the foot of the rocky heights where stood the French forts As the men rowed silently, General Wolfe read in a quiet voice Gray's *Elegy Written in a Country Churchyard*, a poem which had then only just appeared; and when he had finished reading, Wolfe said, "Gentlemen, I would rather be the author of that poem than take Quebec"

When the cove was reached, the soldiers noiselessly climbed to the top of the steep rock to the flat plain above, and surprised the French early on the morning of September 13 As Wolfe had foreseen, the French commander, the marquis of Montcalm, was compelled to attack the English without being prepared.

The battle on the Plains of Abraham was decided in a few minutes by the deadly fire of the English muskets, the French were defeated, but Wolfe fell mortally wounded As he was dying, Wolfe heard an English officer cry, "See how they run!" and he gathered strength to ask, "Who run?" Then, faithful to his task, Wolfe gave his last orders and died, saying, "God be praised I die in peace" On the next day the brave French commander, Montcalm, also died of severe wounds The result of this battle on the Plains of Abraham was that Quebec surrendered, and Canada passed swiftly from the French to the British, for the French forts were widely scattered and unable to unite against the British.

Wolfe's body was brought to England and buried in the church of St. Alfege, Greenwich. On the battle field of Quebec a monument has been erected, which bears on one side the name of Wolfe, and on the other that of Montcalm.

Sir Richard Arkwright, August 3

Richard Arkwright (1732-1792), an English inventor, was born at Preston, in Lancashire, of parents in humble circumstances. He was the youngest of thirteen children, and established himself as a barber at Bolton.

"Come to the subterranean barber, he shaves clean for a penny" This was Richard Arkwright's notice posted up outside his squalid cellar, when he began life as a barber

at eighteen years of age. His parents were so poor that they could not educate him, and the man with a great inventor's brain only learned to write and spell at the age of fifty. Now, the name of Arkwright is famous as the greatest of all inventors in cotton manufacture, as the name of the man who invented the spinning jenny and the drawing frame machine which brought enormous prosperity to Lancashire. It was said that Arkwright's wife smashed his early models because she thought he wasted on them the time he should have given to his customers Arkwright began to make wigs which were much worn at that time, and as he travelled about in country villages to buy hair, he saw the cottagers weaving at their looms in the cottages

The chief difficulty in the cotton manufacture was that all the work had to be done by hand, yarn also was scarce. It was not long before Arkwright gave up his barber's business and set himself to perfect a machine to produce more yarn. Arkwright's machine, with later improvements, is still used in our cotton mills. His work had to be done in secret because the weavers imagined the machine would take away their hand labour and bring them to starvation; the weavers frequently destroyed machinery for this reason. Arkwright had to leave Lancashire and work in Nottingham because his machines were in danger He had to fight against ignorant destroyers, jealous manufacturers, enemies who stole his secrets and dishonest rivals who used his invention as their own He opened a factory himself and it was wrecked by an angry mob. At first, horses were used to turn the machines, but later on, Arkwright set up a steam engine to drive his fine inventions. At last he became very rich and was knighted by George III.

Arkwright had worked an entire revolution in our industrial system and in the lives of the cotton workers. By his cotton mills, thousands of people, who had before worked in their homes, were brought together in large factories, where instead of one person beginning and finishing a piece of work, each had only to work at one process in the manufacture over and over again. Thus the work became less interesting, but could be finished much more quickly. Arkwright's machines brought great prosperity to Lancashire, to England, and to the whole Empire, and helped to place this country at the head of the manufacturing world.

Lord Nelson, October 21

For nearly twenty years, at the end of the 18th and the beginning of the 19th centuries, there was terrible war in most countries of Europe. Napoleon Buonaparte, a great military leader of the French, aimed to become master of Europe Napoleon was a born leader of men and a skilful soldier His armies won battle after battle and for many years no nation could stand against them

During the first years of the war England's chief business was to keep the command of the sea. Her most famous sailor was Horatio Nelson, who became Admiral Lord Nelson Horatio Nelson, the son of a clergyman, was born at the parsonage of Burnham Thorpe in Norfolk. At the age of twelve Nelson, then a small weakly boy, became a midshipman on his uncle's ship. He served a long apprenticeship on merchant vessels and warships, and visited many parts of the world. He often suffered from ill-health and to the end of his life never went to sea without being sea-sick

After war broke out with France, Nelson was engaged on active service for more than seven years, except for a few months when he was invalided home.

Throughout 1794 he was in action against Corsica, where he received a wound in the right eye which caused the loss of sight of that eye. In July 1797 he made a desperate attempt to capture the Spanish treasure fleet at Santa Cruz, the place where Admiral Blake won his last sea-fight. Nelson was not successful, although he attacked with the utmost daring He received a wound in the right arm, which had to be amputated. In



From the painting by Gow in the Royal Exchange, London]
[*By permission of the Gresham Committee*

NELSON LEAVES ENGLAND FOR THE LAST TIME

April 1798 Nelson was sent in command of the fleet at Cadiz, for the French were preparing a fleet for an attack on Egypt Napoleon dreamed of a great empire in the East, where France and not England should command Egypt and India

The French fleet got away to Egypt and after a long weary search Nelson found it anchored at one of the mouths of the Nile. The French admiral had anchored his thirteen battleships in line near the shore, where he believed they could be attacked only from the seaward side With skill and daring Nelson sent his leading ships between the French and the shore, so that he could then attack from both sides A terrific

bombardment took place. Ship after ship struck its colours as Nelson's vessels crept forward through the line. This battle of the Nile raged far into the night. Nelson himself was wounded and carried below. A surgeon ran to attend to him. "No," he said, "I will take my turn with my brave fellows" When the French flagship blew up he hurried on deck and ordered boats to be lowered to save those sailors swimming in the sea. Of the whole French fleet only two ships escaped. Napoleon's plans for the conquest of Egypt and India were completely upset.

Nelson's next great battle was in Denmark, for the Danes were at the time allies of the French. Admiral Sir John Parker was in command of the British with Nelson as second in command. Parker sent Nelson to attack the Danish fort of Copenhagen, which was guarded by the Danish fleet. The British sailed through a dangerous shallow and began the bombardment of the fort. The position of the British ships was so unsafe that Parker gave the signal to retire. But Nelson, feeling sure of victory, put the telescope to his blind eye and remarked to the captain standing by, "I really do not see the signal" After four hours' bombardment Nelson induced the Danes to come to terms, for he said, "The Danes are the brothers, and should never be the enemies of the English" With the help of British boats the wounded Danes were put on shore, and when Nelson landed he was received with shouts of applause by the people because of his kindness to the sufferers

There was a short peace with the French, but when war started again Napoleon made plans to invade England. For two years, 1803 to 1805, England was in constant danger of invasion. Napoleon believed that he could conquer England if the French had for a few hours the command of the sea, so that he could get his armies across the Straits



By Meissonier] [*Photo: W. F Mansell.*

EIGHTEEN-FOURTEEN

of Dover. He got together a large force at Boulogne opposite the coast of Kent. Some dark night he meant to put his army on board many barges and slip across the narrow sea.

In England people made ready for Napoleon. Thousands of volunteers came forward to fight. They dug trenches and built forts On every hilltop beacons were placed ready to flash the news all over the country if Napoleon landed But he never landed. Admiral Nelson put ships to guard the harbour of Boulogne, so that the French could not get their barges out. Then one day, October 21, 1805, Nelson won the famous sea-fight off Cape Trafalgar Napoleon lost many ships and had then no chance of invading England. Let us picture the scene of the battle.

It is daybreak at sea off Cape Trafalgar In two long lines lie the French and Spanish ships. To the west two rows of British ships are bearing down on them in full sail. Nelson is hurrying to the fight. He stands on his flagship the *Victory* watching the enemy through a telescope. Nelson gives orders to fly a signal to all the British ships. Quickly the flags are run up This is the signal:

ENGLAND EXPECTS THAT EVERY MAN WILL DO HIS DUTY.

From every ship a mighty cheer goes up as the sailors read the signal. They *will* do their duty! The guns roar as the British ships draw near the enemy. The battle of Trafalgar has begun. The enemy pour shot after shot into Nelson's ship. One shot passes between Nelson and Captain Hardy. Nelson smiles. "This is too warm work, Hardy, to last long," he remarks.

Now the *Victory* is locked together with three other ships. A Frenchman high up in the rigging of a French ship shoots Nelson through the shoulder. He falls on his face Captain Hardy runs up to him "They have done for me at last, Hardy," says Nelson. "My backbone is shot through." He takes out his handkerchief and covers his face and his stars, so that the crew may not know that he has been shot. About an hour afterwards Nelson speaks for the last time to Hardy "I have done my duty, thank God for that"

The English won a complete victory at Trafalgar

Charles George Gordon, March 26

Charles George Gordon (1833-1885), a notable British soldier, was born at Woolwich and received his early education at Taunton school.

On the school desk used by Gordon, the initials C G. G, carved deeply, are still to be seen, and on the roll of Time this name, carved deeply, still stands for what is noble, courageous, beneficent, patriotic, God-fearing, merciful.

Like most high-spirited boys, he was full of fun, and fond of playing mischievous tricks, but when, at the age of twenty-two, he reached Balaclava as a soldier, his fearlessness and courage carried him through many hair-breadth escapes in the Crimean War "Never order a man to do anything you are afraid to do yourself" was his advice to a shirking corporal. Later on, he became known as Chinese Gordon, because of his heroic conduct as leader of the Chinese against Chinese rebels. He went unarmed, and the Chinese soldiers came to look on the little cane he always carried as "a magic wand of victory." Where the fire was hottest, there Gordon was always to be found, calm and cool. The following extract from a letter to his mother shows what kind of a citizen Gordon was: "I shall leave China poor, as I entered it, but with the knowledge that through my weak instrumentality one hundred thousand lives have been spared. I want no further satisfaction than this" Gordon refused to accept any rewards from the Chinese Government, and when he returned to England he refused to be treated as a hero, and said he had done only his duty, for Chinese Gordon took no credit for any of the great things he had accomplished

For six years after he left China, Gordon was Commanding Royal Engineer at Gravesend. In this work he was an unsparing taskmaster and allowed no shirking in others any more than in himself. In his spare time he worked hard to serve the poor, the sick, the lonely, and specially to care for the boys whose work was on the river or the sea Many a boy who had no work and no home he took from the streets, washed, clothed, fed, and invited into his house to stay with him as his guest; he found work for them, started them in life, taught them, and did all that he could to make them Christian gentlemen A map of the world hanging over his mantelpiece was stuck full of pins these pins showed where his boys had arrived on their voyages, and were moved onward to follow their course. "I pray for each one of them day by day," Gordon said. All these kind deeds were paid for out of his own pocket, and though sometimes he met with ingratitude he was always forgiving, tender-hearted, and merciful, even to the unworthy, and his faith in God was never failing.

In 1873 the Khedive of Egypt offered Gordon a salary of £10,000 a year to be Governor of the tribes of the Upper Nile. Gordon accepted the post, but would not take more than £2,000 a year "to show the Khedive and his people that gold and silver idols are not worshipped by all the world" The land was full of misery on account of the slave trade, and during the three years he governed the Soudan, he rode on a camel eight thousand four hundred and ninety miles across deserts, driving out the slavers from the land. When Gordon resigned his post as Governor General of the Soudan, he was utterly worn out and broken in health. The slaves that he had set free would try to kiss his feet and the hem of his garments. "To this day there is a name known in Egypt and in the Soudan as that of a man who scorned money, who had no fear of any man, who did not fear death, whose mercy was as perfect as his uprightness, and the name of that man is Gordon Pasha"

In 1884 Gordon once more went out to the Soudan where a dervish calling himself the Mahdi, or the Expected One, was stirring up the Soudanese to rebellion. Gordon reached Khartoum, freed the prisoners, strengthened the defences and sent away the sick to Egypt. Gradually the Mahdi's forces gathered round Khartoum, where at last Gordon was the only Englishman left. The expected help from England did not arrive till too late to save Gordon, and on March 26, when the rebels captured the town, he was killed.

The last entry in his journal was, "I have done my best for the honour of our country. Good-bye—C. G. Gordon."

The last words of his last letter to his sister, written when he knew that death was very near, sum up his character "I am quite happy, thank God, and, like Lawrence, I have *tried* to do my duty." The object of Gordon's life was the entire surrender of himself to work out what he believed to be the will of God. The following epitaph has been written by Lord Tennyson

"Warrior of God, man's friend, not here below,
But somewhere dead far in the waste Soudan,
Thou livest in all hearts, for all men know,
That earth hath borne no simpler, nobler man."

Robert Louis Stevenson, December 3

Robert Louis Balfour Stevenson (1850-1894), was born at 8 Howard Place, Edinburgh. This famous writer of *A Child's Garden of Verses*, *Treasure Island*, and other books beloved of children, was a delicate, sickly little boy, who never knew what it was to have good health In spite of pain and illness in his boyhood, he made up his mind that he would never allow bad health to make him selfish and disagreeable, so he turned all his troubles into exciting adventures. As a little boy having to stay

indoors and sometimes in bed during the winter, he would invent all sorts of make-believe games of pirates, Red Indians, and tropical voyages to amuse his playmates Soon after Robert Louis Stevenson was grown up his health broke down, and his doctors sent him to the south of France. Then the world discovered what a delightful writer he was, for in his illness he wrote many happy thoughts about the pleasures of ordinary active life. The man who was almost dying wrote fascinating essays which told how interesting and exciting the world is, and how one can turn trouble into joy by being always cheerful and smiling and happy. It seemed as if he were always playing a serious game of make-believe, which actually became the wonderful reality of his life; he was the soldier, and his sick bed was his battle field, where he won glorious triumphs over gloom and pain, and was victoriously happy in spite of everything. This good-humoured conflict with pain and disease made a hero of him, and enabled him to be kind and thoughtful to others and radiantly happy himself, but it needed indomitable courage. Everyone loved him and delighted to hear his witty, merry, and original conversation. In appearance he was tall, thin and weak, but the unconquerable spirit shone from his fine brown eyes. It is interesting to know that *Treasure Island* was begun one rainy day in Scotland, by his drawing a highly coloured map to amuse his little stepson, and describing the wonderful treasure supposed to be hidden in it and the wicked old pirates trying to steal the treasure. Stevenson's power of imagination invented all sorts of ideas quicker than he could write them, and after telling the little boy an exciting tale of the Treasure Island, he continued writing the story for the next fifteen days.

It was found that Stevenson could not live in a temperate climate, so with the money he gained by writing, he bought a yacht, and his boyish dreams of South Sea Island adventures came true, for he cruised about among the beautiful tropical islands, and finally made his home in Samoa Here the natives loved him and regarded him as the great white chief, and Stevenson gained their deep affection by many kind actions on their behalf In his lifetime the native chiefs, to show their gratitude, built a road to his house which they called the *Road of the Loving Heart*, and at his death on December 3, 1894, they insisted on cutting a path up the steep face of the mountain behind his house so that their friend's body might be carried up the mountain and buried on its summit On the great Samoan tomb are engraved the words Stevenson wrote for himself:

Under the wide and starry sky,
Dig the grave and let me lie.
Glad did I live and gladly die,
And I laid me down with a will
This be the verse you grave for me,
Here he lies where he longed to be,
Home is the sailor, home from the sea,
And the hunter home from the hill.

Florence Nightingale, August 13

Florence Nightingale (1820-1910), a hospital reformer, was born at Florence, Italy, and was named after that city, but her childhood was spent in England. One of the noblest women in history, Florence Nightingale went like an angel of mercy to the soldiers in the Crimea, where she cleansed foul hospitals, gave food to the starving, clothing to the naked, and comfort to the suffering. Her heroic labours in the Crimean War undermined her health so that she was an invalid for the rest of her life, but she laid the foundation of the modern hospital system and of modern nursing. The light of healing and mercy carried by the "Lady of the Lamp" will shine down the ages yet to come.

Born of rich parents, and possessing all the advantages that wealth brings, brilliantly educated, a talented linguist and musician, Florence Nightingale wished to give up the

life of a fine lady and devote herself to nursing Against the wishes of her relatives, she studied nursing in hospitals in London and Paris. Charles Dickens' picture of Sarah Gamp was drawn from life, and was a true picture of the drunken, callous, untrained and untrustworthy nurse of those days, and Florence Nightingale realised the enormous need for trained and organised nursing.

When the Crimean War began Florence Nightingale rose to the opportunity and went out to Scutari with a band of thirty-eight nurses "The entire British Army is perishing"—this was the news that came to England. The wounded soldiers were neglected by the Government; it took eight days to take them from the battle field to the hospital, thus a quarter of the men died in the horrible ships that took them across, and when they reached the hospital, common necessaries and bandages were not ready. Against her friends' opposition, against public opinion, Florence Nightingale went to the help of the wretched soldiers, the doctors and officers hated her interference, and did much to hinder her work; she had to endure insult, but was firm in her determination to carry out her work of healing and mercy. As Superintendent of the Women's Nursing Establishment in English hospitals in Turkey, Florence Nightingale took her thirty-eight nurses to the Crimea, and on the way there she laid in stores at Marseilles, buying what she knew was wanted and spending her own income on the work. It is terrible to read her descriptions of the hospitals—of the frightful overcrowding, of the want of proper beds, of vermin and rats that tormented the wounded There was no proper food, no sanitation, clothes were hardly ever washed, floors were never scrubbed, there was no place to cook food for invalids, there was no operating theatre, no screen put round the bed where a doctor was operating, and there was no house in which to put the dead bodies. The delicately brought up lady helped to scrub floors, and worked twenty hours a day in the hospital, till cleanliness and some comfort for the wounded were obtained She received the wounded, dressed their wounds, washed, clothed and comforted them; she became the feeder and clother of the army at Scutari, often at her own expense.

The stores were grossly mismanaged, and while the wounded were shivering with extreme cold, twenty-seven thousand warm shirts were under lock and key waiting until official orders should be given for their distribution. Once Florence Nightingale broke open cases, and took by force from the Purveyor's store goods held back from suffering men. Stores were badly packed, much was stolen, and some were sent to the wrong places. When hot water bottles and fires were required, the authorities would find that it *couldn't be done* as no special official orders had been given, but the indomitable lady found means to supply the fires and warmth badly needed by the sufferers. During Florence Nightingale's winter at Scutari, the deaths fell from forty-two to two per cent. In a letter home one of the wounded described how when the "Lady of the Lamp" went her rounds through the hospitals at night, the wounded would kiss her shadow as it passed over the pillow, so great was their gratitude and reverence for her. In the second winter of the war Florence Nightingale carried on her work of mercy in the Crimea itself, in spite of opposition from the army surgeons, and she continued her heroic efforts till the last British soldier had left the hospital and the war was over.

By this time she had become the popular heroine, poems were written in her honour, and her portraits were everywhere; but avoiding the public welcome prepared in her honour, Florence Nightingale managed to reach her home unnoticed. Though she remained an invalid for the rest of her life, through her sacrifices in the Crimea, she continued from her bed or her couch to direct a training school for nurses which was established with the £40,000 raised by the nation; she worked to reform entirely

the health arrangements of the army, to provide reading rooms and recreation for the soldiers, to cleanse the workhouse system of nursing, and to reform the entire hospital system of the country.

At the age of eighty-seven Florence Nightingale was honoured by receiving the Order of Merit, and three years later, August 13, 1910, she died, and was buried at East Wellow, Hampshire.

SANTA FILOMENA

Whene'er a noble deed is wrought,
Whene'er is spoken a noble thought,
  Our hearts, in glad surprise,
  To higher levels rise.

The tidal wave of deeper souls
Into our inmost being rolls,
  And lifts us unawares
  Out of all meaner cares.

Honour to those whose words or deeds
Thus help us in our daily needs,
  And by their overflow
  Raise us from what is low!

Thus thought I, as by night I read
Of the great army of the dead,
  The trenches cold and damp,
  The starved and frozen camp,—

The wounded from the battle-plain,
In dreary hospitals of pain,
  The cheerless corridors,
  The cold and stony floors.

Lo! in that house of misery
A lady with a lamp I see
  Pass through the glimmering gloom,
  And flit from room to room

And slow, as in a dream of bliss,
The speechless sufferer turns to kiss
  Her shadow, as it falls
  Upon the darkening walls.

As if a door in heaven should be
Opened and then closed suddenly,
  The vision came and went,
  The light shone and was spent.

On England's annals, through the long
Hereafter of her speech and song,
  That light its rays shall cast
  From portals of the past

A Lady with a Lamp shall stand
In the great history of the land,
  A noble type of good,
  Heroic womanhood

Nor even shall be wanting here
The palm, the lily, and the spear,
  The symbols that of yore
  Saint Filomena bore.

Longfellow

Note.—At Pisa the church of San Francesco contains a chapel dedicated to Santa Filomena; over the altar is a picture, by Savatelli, representing the saint as a beautiful, nymphlike figure, floating down from heaven, attended by two angels bearing the lily, palm and javelin, and beneath, in the foreground, the sick and maimed, who are healed by her intercession.

Lord Lister, February 10

Joseph Lister (1827-1912), was born at Upton, Essex. He was the most famous surgeon of modern times, for he has given to the world a key to life and health, such as it has never before possessed His was the wonderful gift for taking pains and for seeing first causes overlooked by others.

In 1847 operations under chloroform began to be performed in England The fear of operations was gone when it was known the patient would feel no pain. But soon it appeared that after a successful operation, when the patient should have recovered, the wound was attacked by inflammation, or sepsis—hospital gangrene as it was then

called—and sixty to seventy out of a hundred patients died. If the skin were not broken the man probably recovered, but if the skin had been broken, then as a rule the patient died.

A great Frenchman, Pasteur, had discovered that there are microbes everywhere, and doctors knew that there were microbes in the wounds that caused death, but they thought the *wounds* caused the microbes, they did not know that microbes could come only from other microbes. After many experiments Lister found the remedy—"Be clean" Gradually he discovered that it was not the air which had to be feared, but that the surgeon himself, his instruments, his clothes, his hands, and everything he used needed very careful treatment. Lister had all towels, bandages, dressings and everything that came near a wound sterilised; he had instruments made which could be taken to pieces and boiled; he made all his doctors wash in chemicals which would kill any germs upon them. The patients had carbolised baths, and everything in the operating room was disinfected or sterilised.

Lord Lister was gloriously successful in carrying out his great desire to prevent suffering and to save human life. Other nations sent students to learn Lister's methods It came to be recognised that if, after a successful operation, inflammation or blood-poisoning followed, it was probably because the doctor had introduced poisonous germs into the wound from his instruments or by some other means. Before Lister's discoveries, a famous doctor declared that a man on the battle field was in less danger of death than he was in the operating theatre of a hospital. In our own day, owing to Listerism, a doctor may carry on his noble work without pain to the patient, and save from death great numbers who formerly must have perished.

As we should expect from his wonderful work, Lord Lister was a true gentleman, simple, unaffected and modest. All nations benefit by his discoveries, for Listerism governs the surgery of the whole civilised world.

In 1883 Joseph Lister was created a baronet, and in 1897 was raised to the peerage as Baron Lister of Lyme Regis. He died at Walmer, Kent, on February 10, 1912.





From the painting by Sir Joshua Reynolds.] [Photo Braun

SAINT CECILIA